# 1985 ALBERTA HOUSE COST COMPARISON STUDY

Executive Summary

Single Detached Dwelling

24 Unit
Walk-up Apartment

Alberta
DEPARTMENT OF HOUSING

# 1985 ALBERTA HOUSE COST COMPARISON STUDY

Executive Summary

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# PREFACE

The main purpose of the 1985 Alberta House Cost Comparison Study is to provide estimates of the hard construction costs of a prototypical single-detached dwelling and a 24-unit walk-up apartment in nine urban centres in this Province.

The study also compares 1985 residential construction costs with those of previous years in the selected urban centres. Most emphasis is given to a comparison of 1985 with 1984 costs and the study includes an analysis of these differences.

The Alberta Department of Housing has commissioned similar studies for the past seven years. The 1985 study has been carried out by Jubilee Consultants and is documented in three reports:

1985 Alberta House Cost Comparison Study: Executive Summary
1985 Alberta House Cost Comparison Study: Single-Detached Dwelling
1985 Alberta House Cost Comparison Study: Walk-Up Apartment

Additional copies of any of these reports can be ordered from:

ALBERTA DEPARTMENT OF HOUSING
Research and Development Branch
10050 - 112 Street
Edmonton, Alberta
T5K 2J1

# 1.0 INTRODUCTION

# 1.0 INTRODUCTION

## 1.1 Objectives

The objectives of the 1985 Alberta House Cost Comparison Study are as follows:

1. To determine 1985 hard residential construction costs in selected urban centres in Alberta.
2. To determine reasons for differences in residential construction costs in the selected centres.
3. To carry out detailed comparisons of 1985 residential construction costs with 1984 residential construction costs in the selected centres.
4. To determine and comment on residential construction cost trends over the last seven years in the selected centres.

## 1.2 Scope of Work

The 1985 Alberta House Cost Comparison Study examines the construction costs of a typical single-detached dwelling and a twenty-four unit walk-up apartment building.

The study has been documented in three reports: an Executive Summary, a report on a typical single-detached dwelling and a report on a walk-up apartment. This report is the Executive Summary.

The study examines building construction costs in the following centres:

1. Edmonton
2. Calgary
3. Red Deer
4. Fort McMurray
5. Grande Prairie
6. Hinton
7. Lethbridge
8. Medicine Hat
9. Lloydminster

# 1.0 INTRODUCTION

## 1.2 Scope of Work (continued)

The cost analysis for both the single-detached dwelling and the walk-up apartment examines the building construction cost differences between each of the centres and highlights the reasons for those differences with reference to such factors as:

a) material costs,
b) labour costs, and
c) building features and inclusions.

The cost estimates of the single-detached dwelling for each centre include all structural, finishing, mechanical and electrical work as shown on the drawings and included in the specifications, and site overhead. The estimates exclude the following items:

a) cost of land and site clearance,
b) site servicing costs,
c) site development costs,
d) design fees and expenses,
e) legal fees and expenses,
f) marketing and real estate financing costs,
g) appliances: (fridge and stove), and
h) general contractor's overhead and profit.

# 1.0 INTRODUCTION

## 1.2 Scope of Work (continued)

The cost estimates of the walk-up apartment for each centre include all structural, finishing, mechanical and electrical work as shown on the drawings and included in the specifications, site overhead and contractor's overhead and profit. The cost estimates exclude the following items:

a) cost of land and site clearance,
b) site servicing costs,
c) site development costs,
d) design fees and expenses,
e) legal fees and expenses, and
f) marketing and real estate financing costs.

## 1.3 Approach

The building construction costs are detailed in the report under the headings of labour and material/equipment costs. Labour rates used in the report are either those established by the trade union concerned, or by the market where trade union rates do not apply. In most cases, a realistic assessment of labour rates has been established by examining the circumstances of the particular sub-trade within the building industry. Material prices have been evaluated from building materials supplier's lists. Average discounts are applied in order to establish a realistic market price for the materials to contractors.

# 1.0 INTRODUCTION

## 1.3 Approach (continued)

The cost data are assembled by sub-trade and presented in 22 trade categories for the single-detached dwelling and 25 trade categories for the walk-up apartment. The sub-trade operations are combined within each trade category in order to reflect current estimating practice within the industry. Site overhead and general contractor's office overhead and profit are shown separately for the walk-up apartment to indicate the actual site costs.

A computer program was developed in order to collate and present the cost data which were assembled for the nine centres. The quantities and trade descriptions were initially established for the prototypical house and apartment building. The cost data applicable to the relevant quantities and trade descriptions for each centre were then processed by computer.

The cost effects of market forces and building industry conditions are addressed in the 'Findings' section of this report.

# 1.0 INTRODUCTION

## 1.4 Findings

No significant changes were observed as a result of building practice changes, non-availability of materials or changes in standard materials used by the majority of builders.

Due to the increased economic activity in Alberta the construction prices for new residential construction are increasing. This is due to decreasing unemployment, decreasing vacancy rates, decreasing number of foreclosures and lower interest rates as compared with last year. It also appears that the out migration of the recession years has slowed.

Cost increases for single-detached housing in Edmonton, Calgary and Red Deer have been greatest at 4.2%, 5.1% and 5.0% respectively. The average increase for single-detached housing in other centres is 0.7%.

Cost increases for apartment construction were greatest in Edmonton, Calgary and Red Deer at 4.3%, 4.3% and 3.2% respectively. The average increase for apartment construction in other centres is 0.9%.

The graphic presentation of construction costs of the single-detached dwelling in Table SD.7 indicates a return and levelling of costs close to those of 1980 in most of the centres in terms of nominal dollars, i.e., from an average 1980 cost of $38,991 to an average 1985 cost of $40,523 (3.9% higher). However, expressed in terms of inflation adjusted 1985 dollars, costs have fallen dramatically from $53,037 to $40,523, a 23.6% drop.

The graphic presentation of apartment construction costs in Table WA.8 indicates that average costs have fallen to less than 1980 costs expressed in nominal dollars (i.e., from $29,555 in 1980 to $27,912 in 1985, or 5.6%). Expressed in inflation adjusted 1985 dollars, the total average costs are 30.6% less than the 1980 costs (i.e., from $40,202 in 1980 to $27,912 in 1985).

# 1.0 INTRODUCTION

## 1.4 Findings (continued)

Labour costs for single-detached housing decreased in all centres except in Edmonton and Calgary.

Labour costs for apartment constructiion decreased in all centres except Edmonton, Calgary and Lloydminster.

Material prices for single-detached housing increased in all centres. Lumber and concrete prices are notable. Compared with the same time last year, lumber prices are substantially higher. Concrete prices increased as well, mainly due to the introduction of a Federal Sales Tax of 6% on concrete. This tax also applies to concrete products. Concrete prices also vary considerably from centre to centre, due to demand, location and availability of aggregates and cement. In 1985, prices for 20 MPa concrete for single-detached housing varied from $71.90/m3 in Lethbridge to $120.38/m3 in Fort McMurray.

Material prices for apartment construction increased in all centres except in Hinton, where prices decreased very slightly (0.3%). Lumber and construction prices are notable. Compared with the same time last year, lumber prices are substantially higher. Concrete prices increased as well, mainly due to the introduction of a Federal Sales Tax of 6% on concrete. This tax also applies to concrete products. Concrete prices vary considerably from centre to centre, due to demand, location and availability of aggregates and cement. In 1985, prices for 25 MPa concrete for apartments varied from $77.66/m3 in Lethbridge to $130.02/m3 in Fort McMurray.

Other materials such as windows, roof trusses, lumber, insulation,etc., have increased substantially in cost partly due to increase in price and partly as a result of the increase or new applicable federal sales tax.

## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 1 : Total Building Costs

| ITEM | EDMONTON | | CALGARY | | RED DEER | | FORT McMURRAY | | GRANDE PRAIRIE | | HINTON | | LETHBRIDGE | | MEDICINE HAT | | LLOYD-MINSTER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEMENT | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % |
| Labour | 9,798 | 26.3 | 9,594 | 25.7 | 10,385 | 27.1 | 12,991 | 28.5 | 11,563 | 27.0 | 11,764 | 28.2 | 10,876 | 27.5 | 10,886 | 27.5 | 12,008 | 28.1 |
| Material * | 27,471 | 73.7 | 27,747 | 74.3 | 27,991 | 72.9 | 32,573 | 71.5 | 31,222 | 73.0 | 29,896 | 71.8 | 28,610 | 72.5 | 28,635 | 72.5 | 30,741 | 71.9 |
| Total 1985 | 37,269 | 100.0 | 37,341 | 100.0 | 38,377 | 100.0 | 45,564 | 100.0 | 42,785 | 100.0 | 41,660 | 100.0 | 39,485 | 100.0 | 39,521 | 100.0 | 42,749 | 100.0 |
| Cost per m2 | $372.69 | | $373.41 | | $383.77 | | $455.64 | | $427.85 | | $416.60 | | $394.85 | | $395.21 | | $427.49 | |
| Cost per SF | $34.62 | | $34.69 | | $35.62 | | $42.33 | | $39.75 | | $38.70 | | $36.68 | | $36.72 | | $39.71 | |
| Total 1984 | $35,764 | | $35,529 | | $36,540 | | $45,129 | | $42,601 | | $41,421 | | $38,733 | | $39,743 | | $42,351 | |
| Changes From 1984 | 4.2% | | 5.1% | | 5.0% | | 1.0% | | 0.4% | | 0.6% | | 1.9% | | -0.6% | | 0.9% | |

NOTES: * Material cost includes 38 x 140mm (2x6) exterior wall

## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

Table SD. 2 : Comparative Cost Ratios *

| LOCATION | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | HINTON | LETHBRIDGE | MEDICINE HAT | LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|
| EDMONTON | 1.00 | 1.00 | 1.03 | 1.22 | 1.15 | 1.12 | 1.06 | 1.06 | 1.15 |
| CALGARY | 1.00 | 1.00 | 1.03 | 1.22 | 1.15 | 1.12 | 1.06 | 1.06 | 1.14 |
| RED DEER | 0.97 | 0.97 | 1.00 | 1.19 | 1.12 | 1.09 | 1.03 | 1.03 | 1.12 |
| FORT McMURRAY | 0.82 | 0.82 | 0.84 | 1.00 | 0.94 | 0.91 | 0.87 | 0.87 | 0.94 |
| GRANDE PRAIRIE | 0.87 | 0.87 | 0.90 | 1.06 | 1.00 | 0.97 | 0.92 | 0.92 | 1.00 |
| HINTON | 0.89 | 0.90 | 0.92 | 1.09 | 1.03 | 1.00 | 0.95 | 0.95 | 1.03 |
| LETHBRIDGE | 0.94 | 0.95 | 0.97 | 1.15 | 1.08 | 1.06 | 1.00 | 1.00 | 1.08 |
| MEDICINE HAT | 0.94 | 0.94 | 0.97 | 1.15 | 1.08 | 1.05 | 1.00 | 1.00 | 1.08 |
| LLOYD-MINSTER | 0.87 | 0.87 | 0.90 | 1.07 | 1.00 | 0.97 | 0.92 | 0.92 | 1.00 |

* Entries refer to the ratio of the price for a city in the top row of the table divided by a price for the city listed in the column.For example, Red Deer costs are 1.03 times Edmonton costs.

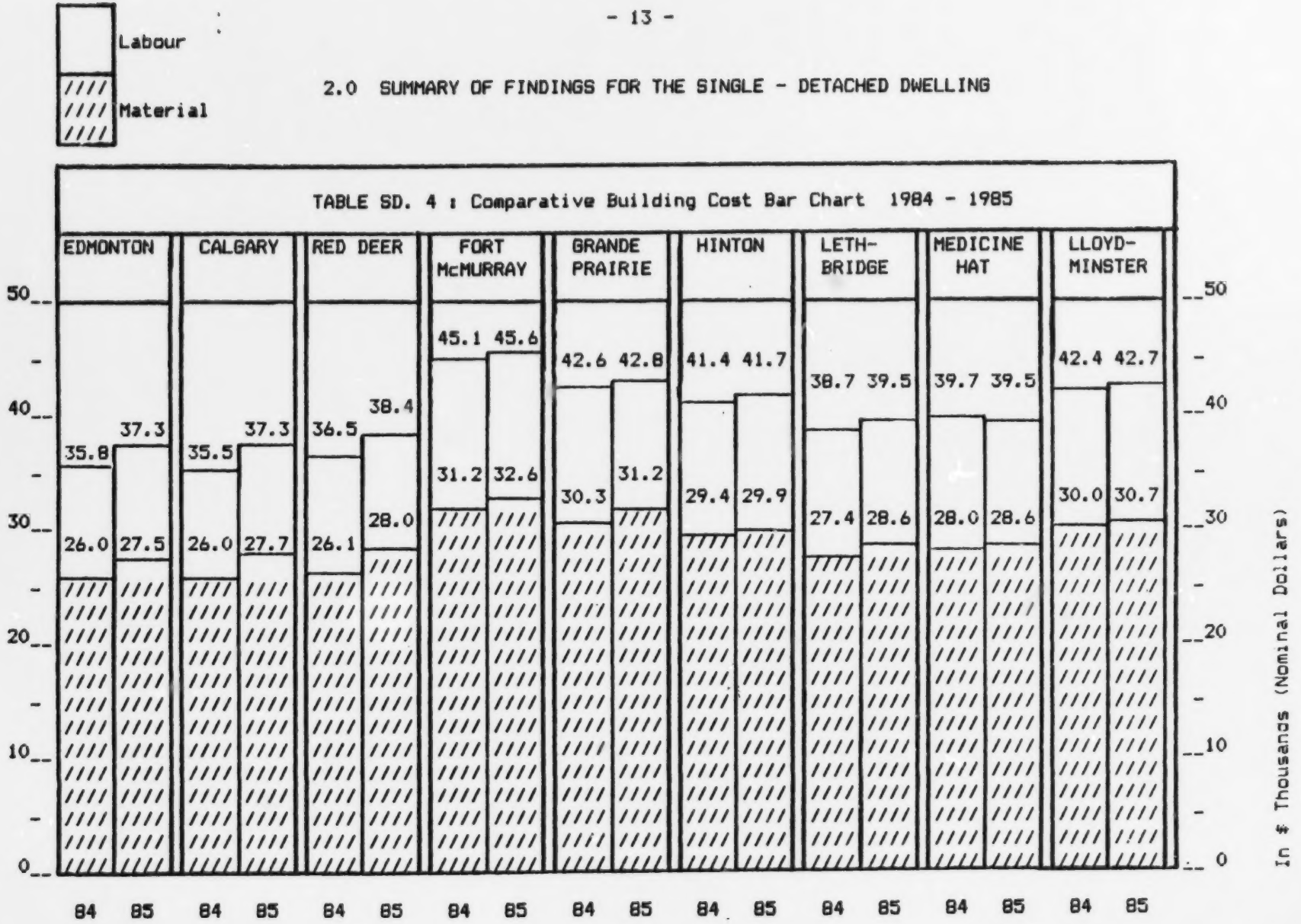
## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

Table SD. 3 : Comparative Cost Table 1984 - 1985

| LOCATION | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | HINTON | LETHBRIDGE | MEDICINE HAT | LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|
| Labour Cost | | | | | | | | | |
| 1985 | $9,798 | $9,594 | $10,385 | $12,991 | $11,563 | $11,764 | $10,876 | $10,886 | $12,008 |
| 1984 | $9,716 | $9,567 | $10,392 | $13,937 | $12,258 | $12,062 | $11,328 | $11,750 | $12,347 |
| Difference | $82 | $27 | ($7) | ($946) | ($695) | ($298) | ($452) | ($864) | ($339) |
| % Difference | 0.8% | 0.3% | -0.1% | -6.8% | -5.7% | -2.5% | -4.0% | -7.4% | -2.7% |
| Mat'l. Cost* | | | | | | | | | |
| 1985 | $27,471 | $27,747 | $27,991 | $32,573 | $31,222 | $29,896 | $28,610 | $28,635 | $30,741 |
| 1984 | $26,048 | $25,962 | $26,148 | $31,192 | $30,343 | $29,359 | $27,405 | $27,993 | $30,004 |
| Difference | $1,423 | $1,785 | $1,843 | $1,381 | $879 | $537 | $1,205 | $642 | $737 |
| % Difference | 5.5% | 6.9% | 7.0% | 4.4% | 2.9% | 1.8% | 4.4% | 2.3% | 2.5% |
| Total Cost | | | | | | | | | |
| 1985 | $37,269 | $37,341 | $38,377 | $45,564 | $42,785 | $41,660 | $39,485 | $39,521 | $42,749 |
| 1984 | $35,764 | $35,529 | $36,540 | $45,129 | $42,601 | $41,421 | $38,733 | $39,743 | $42,351 |
| Difference | $1,505 | $1,812 | $1,837 | $435 | $184 | $239 | $752 | ($222) | $398 |
| % Difference | 4.2% | 5.1% | 5.0% | 1.0% | 0.4% | 0.6% | 1.9% | -0.6% | 0.9% |

NOTE : * Material cost includes 38 x 140mm exterior wall

## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING



## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

Table SD. 5 : Comparative Total Building Costs 1979 - 1985 *

| YEAR | AVERAGE | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | ** HINTON | LETHBRIDGE | MEDICINE HAT | *** LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | $32,057 | $29,545 | $28,810 | $31,431 | $37,364 | $34,348 | - | $30,651 | $32,249 | - |
| 1980 | $38,991 | $36,239 | $34,964 | $37,206 | $45,747 | $42,143 | - | $38,055 | $38,586 | - |
| 1981 | $42,304 | $39,925 | $39,578 | $40,159 | $48,339 | $44,655 | - | $41,910 | $41,561 | - |
| 1982 | $41,029 | $37,732 | $36,894 | $40,432 | $46,257 | $40,814 | $42,453 | $41,546 | $42,102 | - |
| 1983 | $38,565 | $35,723 | $34,953 | $36,941 | $43,021 | $40,449 | $39,676 | $38,427 | $39,326 | - |
| 1984 | $39,757 | $35,764 | $35,529 | $36,540 | $45,129 | $42,601 | $41,421 | $38,733 | $39,743 | $42,351 |
| 1985 | $40,523 | $37,269 | $37,341 | $38,337 | $45,564 | $42,785 | $41,660 | $39,485 | $39,521 | $42,749 |

NOTES : * Expressed in nominal dollars
** Hinton was not included in the 1979, 1980 and 1981 studies
*** Lloydminster was not included in the 1979 through 1983 studies

## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

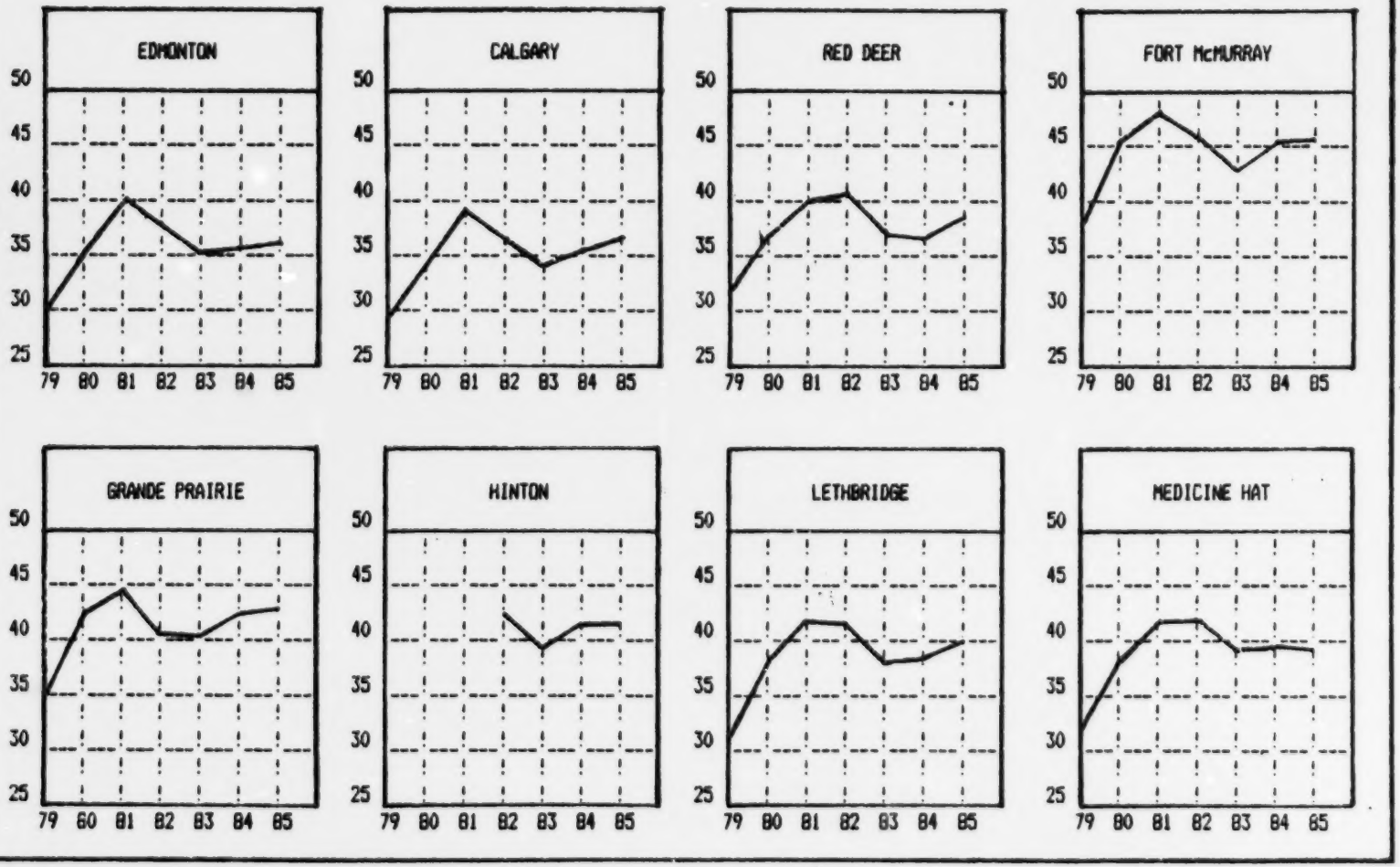
Table SD. 6 : Comparative Cost per Square Foot of Gross Floor Area 1979 - 1985 *

| YEAR | AVERAGE | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | ** HINTON | LETHBRIDGE | MEDICINE HAT | *** LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | $29.78 | $27.45 | $26.76 | $29.20 | $34.71 | $31.91 | - | $28.47 | $29.96 | - |
| 1980 | $36.22 | $33.66 | $32.48 | $34.56 | $42.50 | $39.15 | - | $35.35 | $35.85 | - |
| 1981 | $39.30 | $37.09 | $36.77 | $37.30 | $44.91 | $41.48 | - | $38.93 | $38.61 | - |
| 1982 | $38.10 | $35.05 | $34.27 | $37.56 | $42.97 | $37.82 | $39.44 | $38.60 | $39.11 | - |
| 1983 | $35.83 | $33.19 | $32.47 | $34.32 | $39.97 | $37.58 | $36.86 | $35.70 | $36.53 | - |
| 1984 | $36.95 | $33.24 | $33.02 | $33.96 | $41.94 | $39.59 | $38.50 | $36.00 | $36.94 | $39.36 |
| 1985 | $37.65 | $34.62 | $34.69 | $35.62 | $42.33 | $39.75 | $38.70 | $36.68 | $36.72 | $39.71 |

NOTES : * Expressed in nominal dollars
** Hinton was not included in the 1979, 1980 and 1981 studies
*** Lloydminster was not included in the 1979 through 1983 studies

## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

TABLE SD. 7 : Comparative Total Building Cost Graphs 1979 - 1985



## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

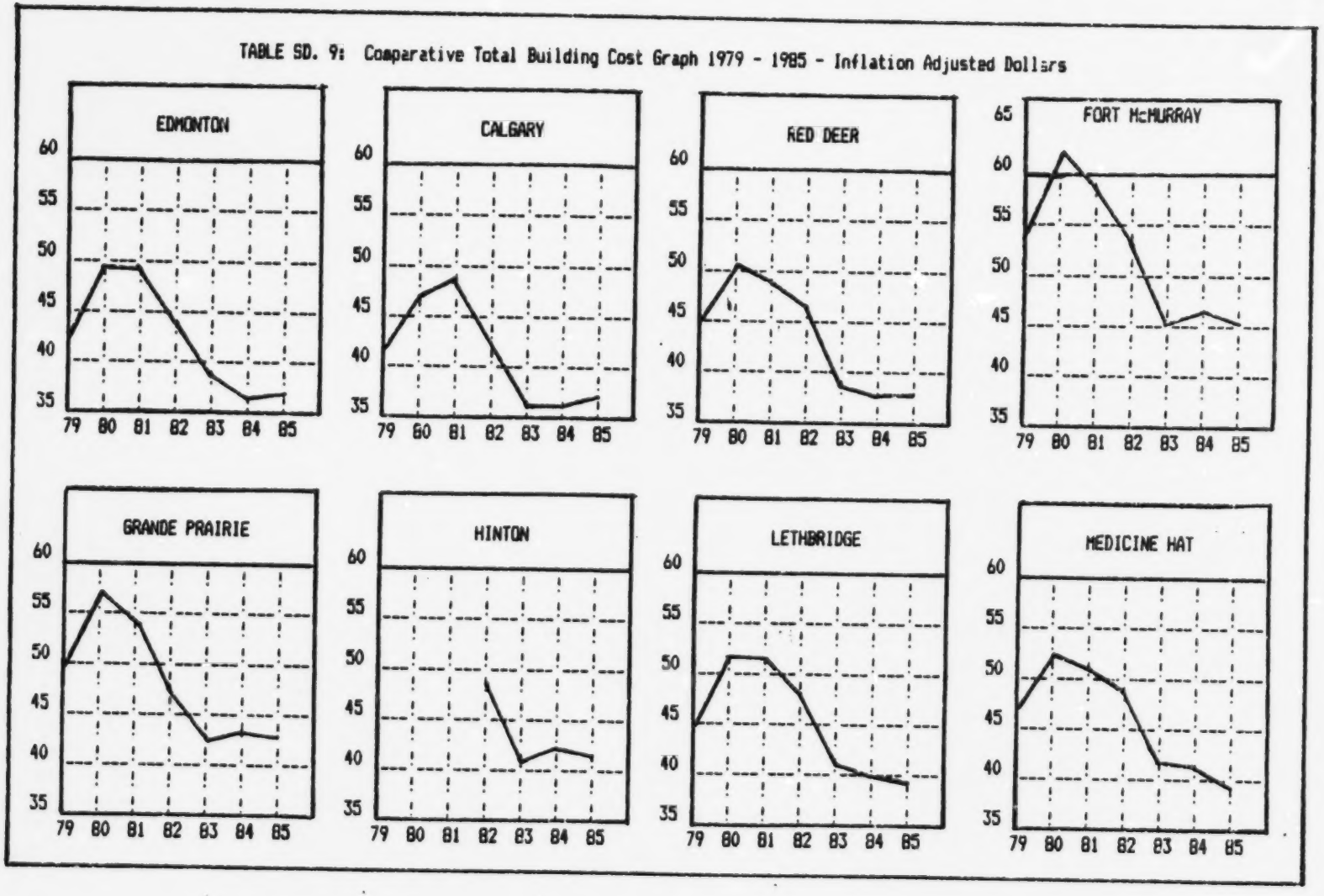
Table SD .8 : Comparative Total Building Costs 1979 - 1985, Inflation Adjusted Dollars *

| YEAR | AVERAGE | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | ** HINTON | LETHBRIDGE | MEDICINE HAT | *** LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | $45,783 | $42,196 | $41,146 | $44,889 | $53,363 | $49,055 | - | $43,775 | $46,058 | - |
| 1980 | $53,037 | $49,294 | $47,559 | $50,609 | $62,227 | $57,325 | - | $51,764 | $52,486 | - |
| 1981 | $51,999 | $49,075 | $48,648 | $49,362 | $59,417 | $54,889 | - | $51,515 | $51,086 | - |
| 1982 | $47,359 | $43,554 | $42,586 | $46,670 | $53,394 | $47,111 | $49,003 | $47,956 | $48,598 | - |
| 1983 | $40,527 | $37,540 | $36,731 | $38,820 | $45,209 | $42,507 | $41,694 | $40,382 | $41,327 | - |
| 1984 | $40,815 | $36,716 | $36,474 | $37,512 | $46,330 | $43,735 | $42,523 | $39,764 | $40,801 | $43,478 |
| 1985 | $40,523 | $37,269 | $37,341 | $38,337 | $45,564 | $42,785 | $41,660 | $39,485 | $39,521 | $42,749 |

NOTES : * 1. Expressed in 1985 Inflation adjusted dollars
2. Inflation adjustments have been based on the Residential Building Construction Input Price Index for the Prairie Provinces as published by Statistics Canada
** Hinton was not included in the 1979, 1980 and 1981 studies
*** Lloydminster was not included in 1979 through 1983 studies

## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

TABLE SD. 9: Comparative Total Building Cost Graph 1979 - 1985 - Inflation Adjusted Dollars



## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

Table SD.10 : Trade Division Cost Summaries

| LOCATION | EDMONTON | CALGARY | RED DEER | FORT MCMURRAY | GRANDE PRAIRIE | HINTON | LETHBRIDGE | MEDICINE HAT | LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|
| Divisions | | | | | | | | | |
| 1. Excavation | 788 | 1,052 | 811 | 1,164 | 954 | 891 | 1,073 | 866 | 1,094 |
| 2. Concrete | 4,596 | 4,930 | 5,022 | 6,511 | 6,272 | 6,008 | 4,634 | 5,009 | 5,701 |
| 3. Damproofing | 287 | 276 | 349 | 494 | 467 | 382 | 385 | 342 | 353 |
| 4. Siding | 2,266 | 2,266 | 2,511 | 2,857 | 2,761 | 2,453 | 2,458 | 2,476 | 2,736 |
| 5. Roofing | 968 | 968 | 989 | 1,112 | 1,031 | 982 | 1,051 | 1,149 | 934 |
| 6. Carpentry - Rough | 7,804 | 7,674 | 7,750 | 9,103 | 8,199 | 7,805 | 7,835 | 7,875 | 8,041 |
| 7. Carpentry - Finish | 681 | 684 | 684 | 798 | 776 | 702 | 709 | 705 | 736 |
| 8. Windows and Glazing | 1,684 | 1,688 | 1,722 | 1,793 | 1,787 | 1,737 | 1,735 | 1,735 | 1,758 |
| 9. Sealants | 52 | 52 | 52 | 57 | 57 | 55 | 52 | 52 | 55 |
| 10. Doors | 978 | 951 | 978 | 1,131 | 1,127 | 1,121 | 1,043 | 1,023 | 1,109 |
| 11. Hardware | 176 | 176 | 176 | 190 | 190 | 182 | 179 | 179 | 185 |
| SUB - TOTAL | $20,280 | $20,717 | $21,044 | $25,210 | $23,621 | $22,318 | $21,154 | $21,411 | $22,702 |

## 2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING

Table SD.10 : Trade Division Cost Summaries (cont'd)

| LOCATION | EDMONTON | CALGARY | RED DEER | FORT MCMURRAY | GRANDE PRAIRIE | HINTON | LETHBRIDGE | MEDICINE HAT | LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|
| Divisions | | | | | | | | | |
| 12. Ceramic Tiling | 181 | 176 | 186 | 218 | 213 | 204 | 208 | 213 | 260 |
| 13. Wallboard | 3,445 | 3,310 | 3,451 | 4,567 | 3,936 | 3,920 | 3,598 | 3,549 | 4,523 |
| 14. Flooring | 1,325 | 1,332 | 1,366 | 1,533 | 1,489 | 1,445 | 1,369 | 1,369 | 1,413 |
| 15. Painting | 1,310 | 1,268 | 1,429 | 1,637 | 1,538 | 1,601 | 1,585 | 1,584 | 1,600 |
| 16. Fitting | 2,169 | 2,169 | 2,229 | 2,555 | 2,413 | 2,262 | 2,392 | 2,393 | 2,462 |
| 17. Specialties | 170 | 170 | 170 | 199 | 199 | 178 | 173 | 173 | 181 |
| 18. Appliances | 100 | 100 | 100 | 121 | 120 | 107 | 105 | 104 | 115 |
| 19. Plumbing | 2,140 | 2,050 | 2,050 | 2,400 | 2,375 | 2,325 | 2,075 | 2,125 | 2,400 |
| 20. Heating | 1,500 | 1,400 | 1,500 | 1,925 | 1,880 | 2,000 | 1,700 | 1,700 | 2,000 |
| 21. Electrical | 1,650 | 1,660 | 1,850 | 2,200 | 2,000 | 2,300 | 2,125 | 1,900 | 2,100 |
| 22. Site Over-head | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| TOTAL | $37,269 | $37,341 | $38,377 | $45,564 | $42,785 | $41,660 | $39,485 | $39,521 | $42,749 |

# 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

## 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 1 : Total Building Costs

| ITEM | EDMONTON | | CALGARY | | RED DEER | | FORT McMURRAY | | GRANDE PRAIRIE | | HINTON | | LETHBRIDGE | | MEDICINE HAT | | LLOYD-MINSTER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEMENT | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % | TOTAL $ | % |
| Labour | 227,892 | 36.4 | 225,005 | 36.5 | 237,926 | 36.9 | 278,792 | 38.0 | 256,595 | 36.9 | 259,347 | 37.6 | 239,414 | 36.8 | 246,926 | 37.7 | 272,592 | 38.1 |
| Material | 398,082 | 63.6 | 392,044 | 63.5 | 406,539 | 63.1 | 455,628 | 62.0 | 438,884 | 63.1 | 431,179 | 62.4 | 411,729 | 63.2 | 408,422 | 62.3 | 441,944 | 61.9 |
| Total 1985 | 625,974 | 100.0 | 617,049 | 100.0 | 644,466 | 100.0 | 734,420 | 100.0 | 695,480 | 100.0 | 690,526 | 100.0 | 651,143 | 100.0 | 655,347 | 100.0 | 714,537 | 100.0 |
| Cost per m2 | $337.09 | | $333.28 | | $347.05 | | $395.49 | | $374.52 | | $371.85 | | $350.64 | | $352.91 | | $384.78 | |
| Cost per SF | $31.32 | | $30.87 | | $32.24 | | $36.74 | | $34.79 | | $34.55 | | $32.58 | | $32.79 | | $35.73 | |
| Total per Apt. 1985 | $26,082 | | $25,710 | | $26,853 | | $30,601 | | $28,978 | | $28,772 | | $27,131 | | $27,306 | | $29,772 | |
| Total 1984.$ | 600,039 | | 591,861 | | 624,342 | | 731,995 | | 694,794 | | 693,688 | | 632,121 | | 652,014 | | 701,901 | |
| Total per Apt. 1984 .$ | 25,002 | | 24,661 | | 26,014 | | 30,500 | | 28,950 | | 28,904 | | 26,338 | | 27,167 | | 29,246 | |
| Changes From 1984 | 4.3% | | 4.3% | | 3.2% | | 0.3% | | 0.1% | | -0.5% | | 3.0% | | 0.5% | | 1.8% | |

## 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

Table WA. 2 : Comparative Cost Ratios *

| LOCATION | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | HINTON | LETHBRIDGE | MEDICINE HAT | LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|
| EDMONTON | 1.00 | 0.99 | 1.03 | 1.17 | 1.11 | 1.10 | 1.04 | 1.05 | 1.14 |
| CALGARY | 1.01 | 1.00 | 1.04 | 1.19 | 1.13 | 1.12 | 1.06 | 1.06 | 1.16 |
| RED DEER | 0.97 | 0.96 | 1.00 | 1.14 | 1.08 | 1.07 | 1.01 | 1.02 | 1.11 |
| FORT McMURRAY | 0.85 | 0.84 | 0.88 | 1.00 | 0.95 | 0.94 | 0.89 | 0.89 | 0.97 |
| GRANDE PRAIRIE | 0.90 | 0.89 | 0.93 | 1.06 | 1.00 | 0.99 | 0.94 | 0.94 | 1.03 |
| HINTON | 0.91 | 0.89 | 0.93 | 1.06 | 1.01 | 1.00 | 0.94 | 0.95 | 1.03 |
| LETHBRIDGE | 0.96 | 0.95 | 0.99 | 1.13 | 1.07 | 1.06 | 1.00 | 1.01 | 1.10 |
| MEDICINE HAT | 0.96 | 0.94 | 0.98 | 1.12 | 1.06 | 1.05 | 0.99 | 1.00 | 1.09 |
| LLOYD-MINSTER | 0.88 | 0.86 | 0.90 | 1.03 | 0.97 | 0.97 | 0.91 | 0.92 | 1.00 |

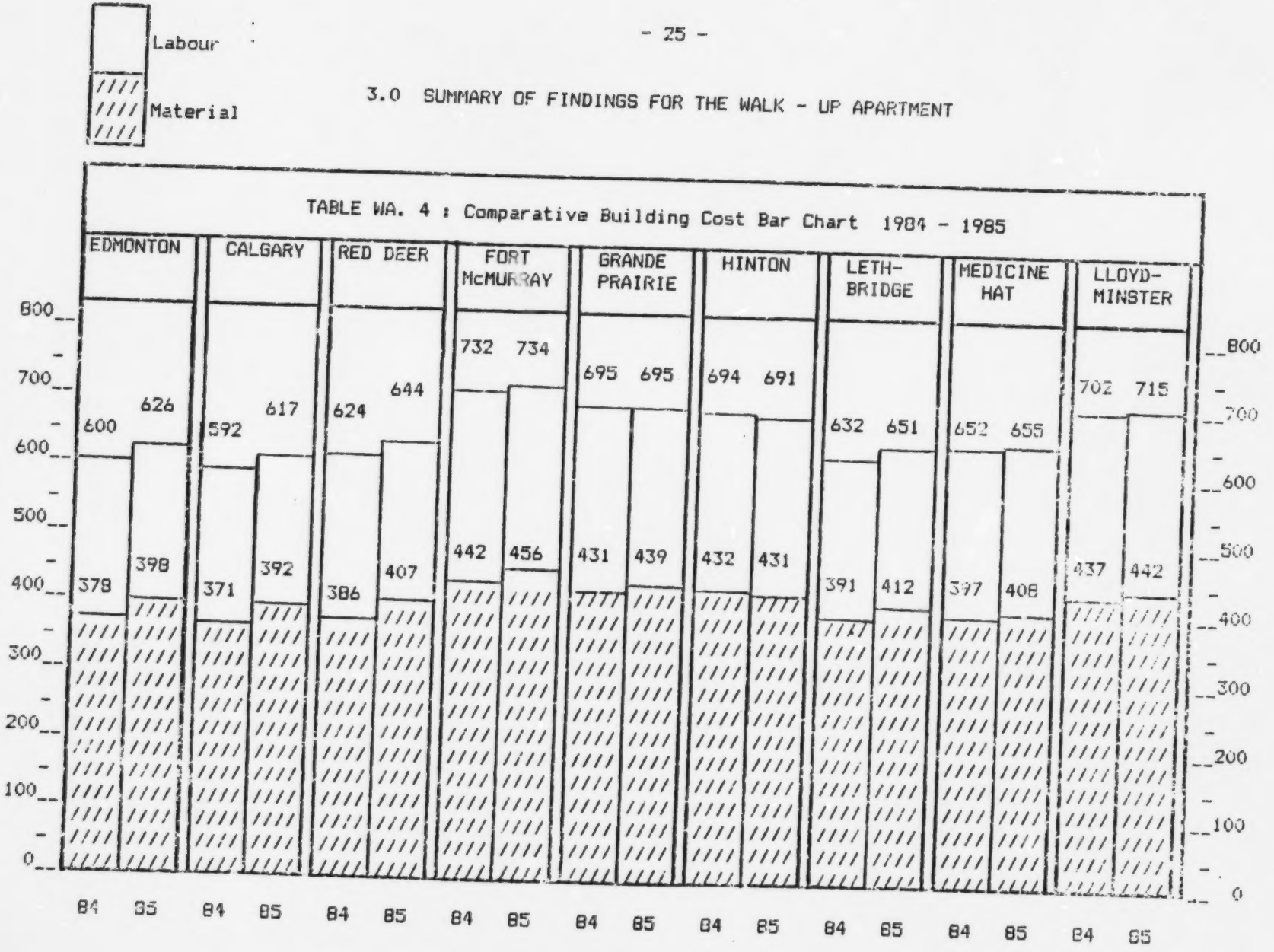
* Entries refer to the ratio of the price for a city in the top row of the table divided by a price for the city listed in the column. For example Red Deer costs are 1.03 times Edmonton costs.

## 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

Table WA. 3 : Comparative Cost Table 1984 - 1985

| LOCATION | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | HINTON | LETHBRIDGE | MEDICINE HAT | LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|
| Labour Cost | | | | | | | | | |
| 1985 | $227,892 | $225,005 | $237,926 | $278,792 | $256,595 | $259,347 | $239,414 | $246,926 | $272,592 |
| 1984 | $221,594 | $221,078 | $238,509 | $289,646 | $264,057 | $261,210 | $241,448 | $254,540 | $265,174 |
| Difference | $6,298 | $3,927 | ($583) | ($11,054) | ($7,462) | ($1,863) | ($2,034) | ($7,614) | $7,419 |
| % Difference | 2.8% | 1.8% | -0.2% | -3.8% | -2.8% | -0.7% | -0.8% | -3.0% | 2.8% |
| Mat'l Cost | | | | | | | | | |
| 1985 | $398,082 | $392,044 | $406,539 | $455,628 | $438,684 | $431,179 | $411,729 | $408,422 | $441,944 |
| 1984 | $378,445 | $370,783 | $385,833 | $442,149 | $430,737 | $432,478 | $390,673 | $397,474 | $436,727 |
| Difference | $19,637 | $21,261 | $20,706 | $13,479 | $8,147 | ($1,299) | $21,056 | $10,948 | $5,217 |
| % Difference | 5.2% | 5.7% | 5.4% | 3.0% | 1.9% | -0.3% | 5.4% | 2.8% | 1.2% |
| Total Cost | | | | | | | | | |
| 1985 | $625,974 | $617,049 | $644,466 | $734,420 | $695,480 | $690,526 | $651,143 | $655,347 | $714,537 |
| 1984 | $600,039 | $591,861 | $624,342 | $731,995 | $694,794 | $693,688 | $632,121 | $652,014 | $701,901 |
| Difference | $25,935 | $25,188 | $20,124 | $2,425 | $686 | ($3,162) | $19,022 | $3,333 | $12,636 |
| % Difference | 4.3% | 4.3% | 3.2% | 0.3% | 0.1% | -0.5% | 3.0% | 0.5% | 1.8% |

## 3.0 SUMMARY OF FINDINGS FOR THE WALK - UP APARTMENT



## 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

Table WA. 5 : Comparative Total Building Costs 1980 - 1985 *

| YEAR | AVERAGE | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | ** HINTON | LETHBRIDGE | MEDICINE HAT | *** LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1980 | $709,337 | $660,295 | $670,183 | $685,282 | $811,898 | $736,435 | - | $703,808 | $697,459 | - |
| 1981 | $756,703 | $714,492 | $719,003 | $733,211 | $861,728 | $784,409 | - | $740,084 | $745,992 | - |
| 1982 | $712,232 | $665,273 | $627,844 | $710,485 | $805,134 | $700,436 | $744,686 | $720,280 | $723,716 | - |
| 1983 | $644,459 | $603,046 | $592,174 | $623,852 | $712,262 | $669,574 | $674,016 | $632,872 | $647,843 | - |
| 1984 | $658,084 | $600,039 | $591,861 | $624,342 | $731,995 | $694,794 | $693,688 | $632,121 | $652,014 | $701,901 |
| 1985 | $669,882 | $625,974 | $617,049 | $644,466 | $734,420 | $695,480 | $690,526 | $651,143 | $665,347 | $714,537 |

NOTES : * Expressed in nominal dollars
** Hinton was not included in the 1980 and 1981 studies
*** Lloydminster was not included in the 1980 through 1983 studies

## 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

Table WA. 6 : Comparative Cost per Square Foot of Gross Floor Area 1980 - 1985 *

| YEAR | AVERAGE | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | ** HINTON | LETHBRIDGE | MEDICINE HAT | *** LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1980 | $35.48 | $33.04 | $33.52 | $34.28 | $40.61 | $36.84 | - | $35.20 | $34.09 | - |
| 1981 | $37.86 | $35.75 | $35.97 | $36.68 | $43.11 | $39.24 | - | $37.03 | $37.22 | - |
| 1982 | $35.63 | $33.28 | $31.41 | $35.54 | $40.28 | $35.04 | $37.26 | $36.03 | $36.21 | - |
| 1983 | $32.24 | $30.17 | $29.63 | $31.21 | $35.63 | $33.50 | $33.72 | $31.66 | $32.41 | - |
| 1984 | $32.92 | $30.02 | $29.61 | $31.23 | $36.62 | $34.76 | $34.70 | $31.62 | $32.62 | $35.11 |
| 1985 | $33.51 | $31.32 | $30.87 | $32.24 | $36.74 | $34.79 | $34.55 | $32.58 | $32.79 | $35.75 |

NOTES : * Expressed in nominal dollars
** Hinton was not included in the 1980 and 1981 studies
*** Lloydminster was not included in the 1980 through 1983 studies

## 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

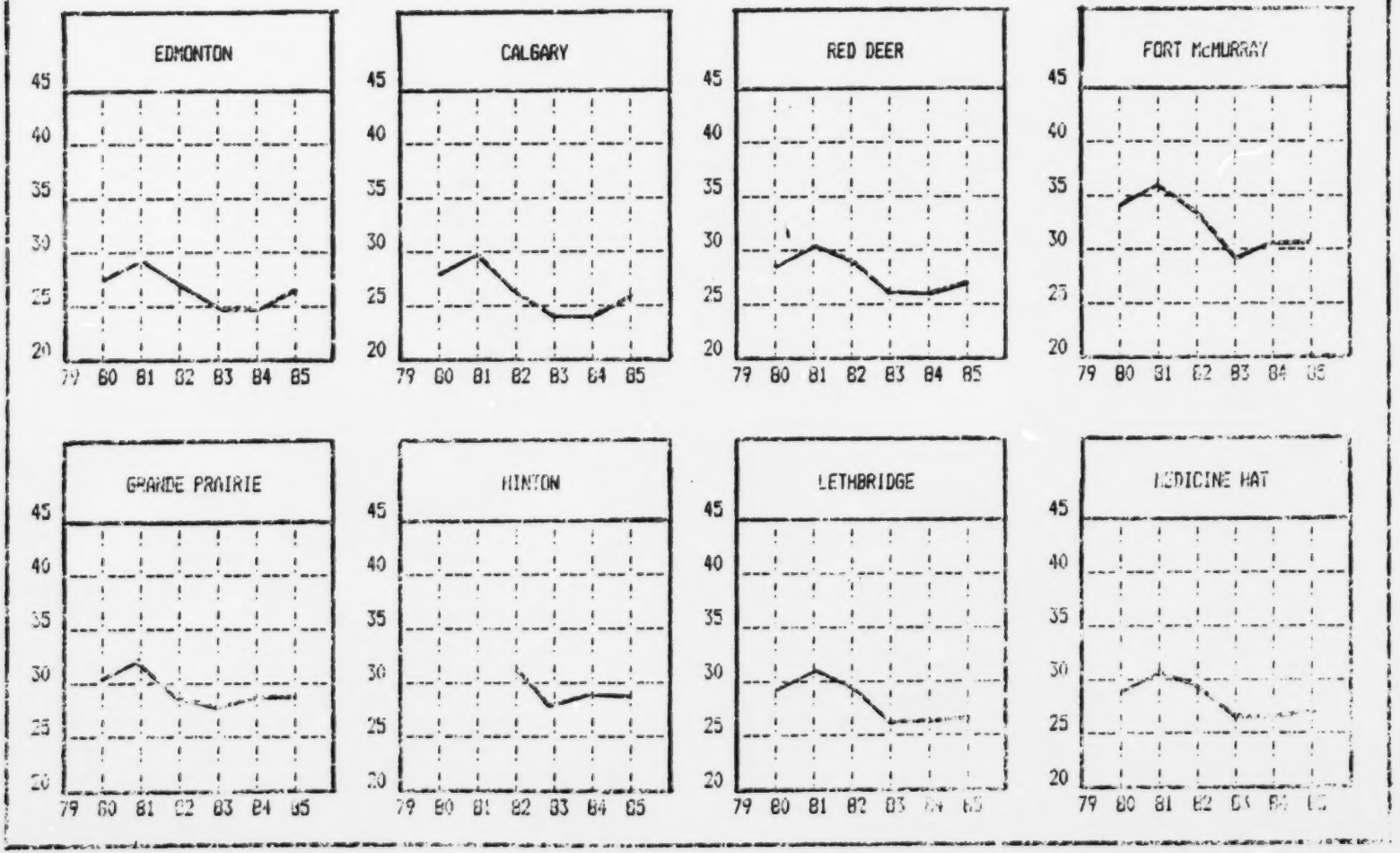
Table WA. 7 : Comparative Cost per Apartment Unit 1980 - 1985 *

| YEAR | AVERAGE | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | ** HINTON | LETHBRIDGE | MEDICINE HAT | *** LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1980 | $29,555 | $27,512 | $27,924 | $28,553 | $33,829 | $30,684 | - | $29,325 | $29,061 | - |
| 1981 | $31,529 | $29,771 | $29,958 | $30,550 | $35,905 | $32,684 | - | $30,637 | $31,000 | - |
| 1982 | $29,677 | $27,720 | $26,160 | $29,604 | $33,547 | $29,185 | $31,029 | $30,012 | $30,153 | - |
| 1983 | $26,853 | $25,127 | $24,674 | $25,994 | $29,678 | $27,899 | $28,085 | $26,370 | $26,979 | - |
| 1984 | $27,420 | $25,002 | $24,661 | $26,014 | $30,500 | $28,950 | $28,904 | $26,338 | $27,167 | $29,246 |
| 1985 | $27,912 | $26,082 | $25,710 | $26,853 | $30,601 | $28,978 | $28,772 | $27,131 | $27,306 | $27,772 |

NOTES : * Expressed in nominal dollars
** Hinton was not included in the 1980 and 1981 studies
*** Lloydminster was not included in the 1980 through 1983 studies

## 3.0 SUMMARY OF FINDINGS FOR THE WALK - UP APARTMENT

TABLE WA. 8 : Comparative Apartment Unit Cost Graphs 1980 - 1985




$ 's Thousands (Canadian Dollars)

## 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

Table WA. 9 : Comparative Cost per Apartment Unit 1980 - 1985, Inflation Adjusted Dollars *

| YEAR | AVERAGE | EDMONTON | CALGARY | RED DEER | FORT McMURRAY | GRANDE PRAIRIE | ** HINTON | LETHBRIDGE | MEDICINE HAT | *** LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1980 | $40,202 | $37,423 | $37,983 | $38,839 | $46,015 | $41,738 | - | $39,889 | $39,530 | - |
| 1981 | $38,755 | $36,894 | $36,824 | $37,551 | $44,134 | $40,174 | - | $37,904 | $38,104 | - |
| 1982 | $34,256 | $31,997 | $30,196 | $34,172 | $38,723 | $33,660 | $35,816 | $34,643 | $34,602 | - |
| 1983 | $29,219 | $26,405 | $25,929 | $27,316 | $31,188 | $29,318 | $29,514 | $27,711 | $28,367 | - |
| 1984 | $28,150 | $25,667 | $25,317 | $26,706 | $31,312 | $29,720 | $29,673 | $27,039 | $27,890 | $30,024 |
| 1985 | $27,912 | $26,082 | $25,710 | $26,053 | $30,601 | $28,978 | $28,772 | $27,131 | $27,304 | $29,772 |

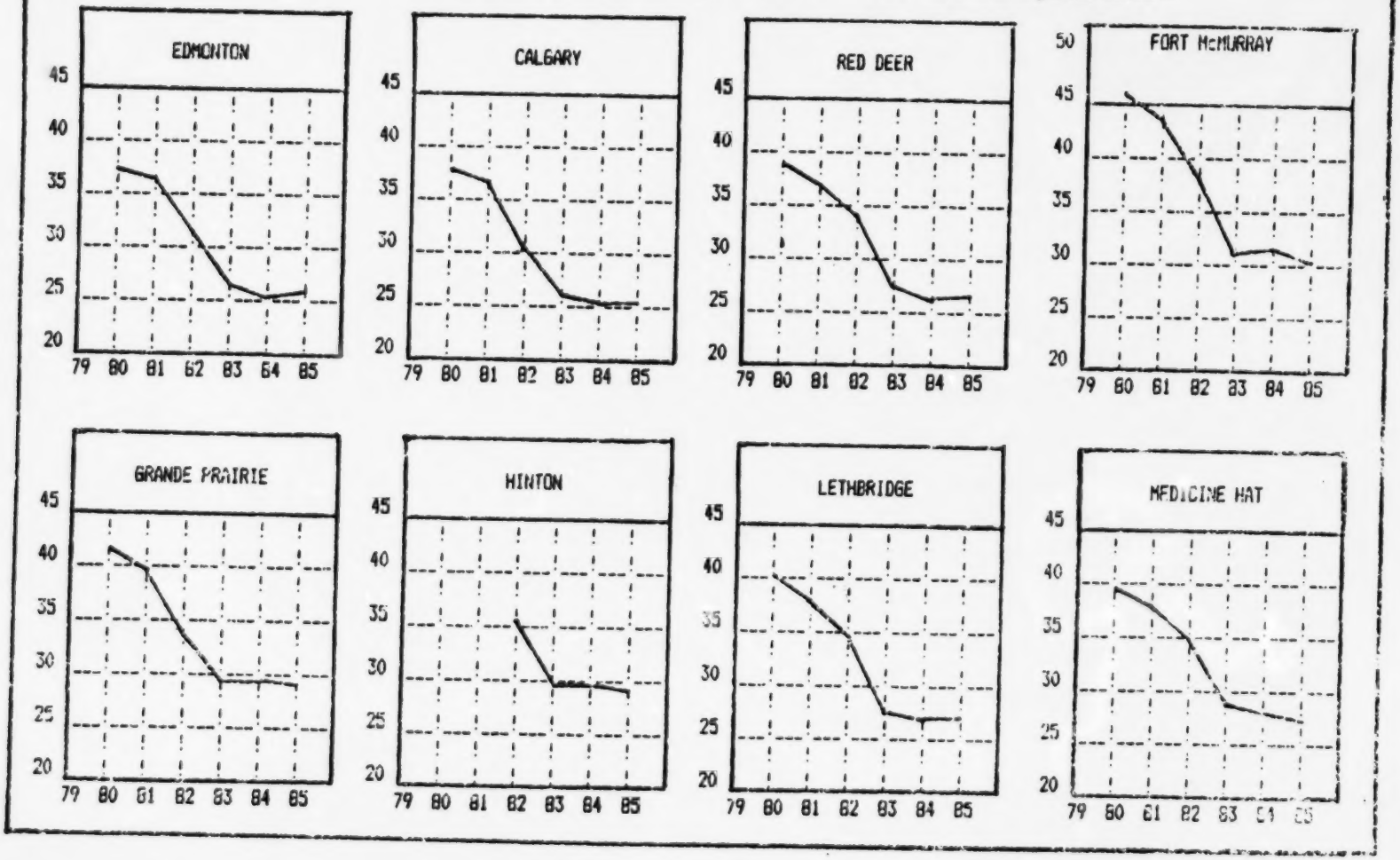
NOTES : * 1. Expressed in 1985 inflation adjusted dollars
2. Inflation adjustments have been based on the Residential Building Construction Input Price Index for the Prairie Provinces as published by Statistics Canada.

** Hinton was not included in the 1980 and 1981 studies

*** Lloydminster was not included in 1980 through 1983 studies

## 3.0 SUMMARY OF FINDINGS FOR THE WALK - UP APARTMENT

TABLE WA. 10 : Comparative Apartment Unit Cost Graphs 1980 - 1985 -Inflation Adjusted Dollars



## 3.0 SUMMARY OF FINDINGS FOR THE WALK - UP APARTMENTS

Table WA.11 : Trade Division Cost Summaries

| LOCATION | EDMONTON | CALGARY | RED DEER | FORT MCMURRAY | GRANDE PRAIRIE | HINTON | LETHBRIDGE | MEDICINE HAT | LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|
| Divisions | | | | | | | | | |
| 1. Excavation | 2,408 | 3,377 | 2,546 | 3,706 | 3,209 | 2,718 | 3,474 | 2,927 | 3,472 |
| 2. Concrete | 15,767 | 16,777 | 17,096 | 22,130 | 21,184 | 20,150 | 15,909 | 16,966 | 19,516 |
| 3. Damproofing | 656 | 629 | 796 | 1,135 | 1,071 | 876 | 881 | 780 | 809 |
| 4. Siding | 13,032 | 12,815 | 13,106 | 17,800 | 16,980 | 16,842 | 15,211 | 15,542 | 17,310 |
| 5. Roofing | 21,826 | 22,584 | 23,133 | 30,784 | 24,966 | 24,910 | 22,812 | 22,812 | 25,575 |
| 6. Carpentry - Rough | 108,044 | 104,905 | 106,744 | 129,875 | 115,383 | 110,514 | 109,397 | 111,062 | 113,560 |
| 7. Carpentry - Finish | 7,137 | 7,366 | 7,127 | 8,047 | 7,530 | 7,583 | 7,307 | 7,521 | 7,591 |
| 8. Windows and Glazing | 23,312 | 22,088 | 24,573 | 28,910 | 25,194 | 24,933 | 24,969 | 24,969 | 25,101 |
| 9. Sealants | 763 | 763 | 763 | 844 | 818 | 796 | 775 | 775 | 799 |
| 10. Doors | 35,621 | 33,925 | 35,661 | 38,943 | 40,171 | 39,966 | 38,292 | 37,130 | 39,824 |
| 11. Hardware | 3,050 | 3,050 | 3,050 | 3,299 | 3,293 | 3,158 | 3,110 | 3,103 | 3,198 |
| 12. Ceramic Tiling | 4,953 | 4,816 | 5,090 | 5,976 | 5,839 | 5,602 | 5,699 | 5,836 | 7,124 |
| SUB - TOTAL | $236,569 | $233,095 | $239,685 | $291,449 | $265,638 | $258,048 | $247,836 | $249,423 | $263,879 |

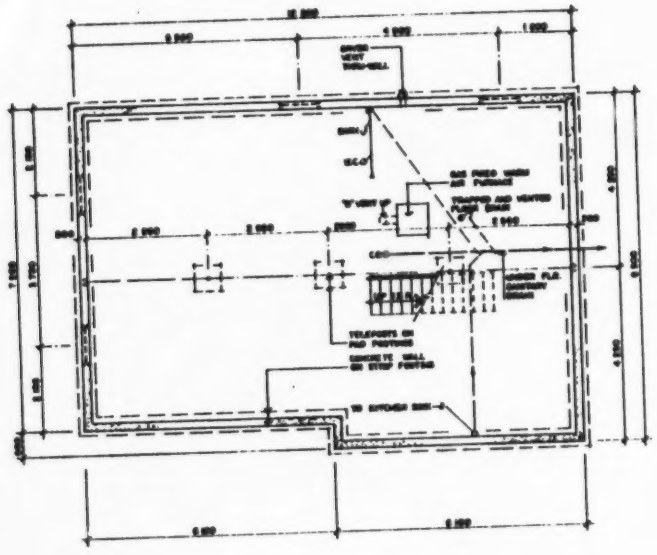
## 3.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENTS

Table WA.11 : Trade Division Cost Summaries (cont'd)

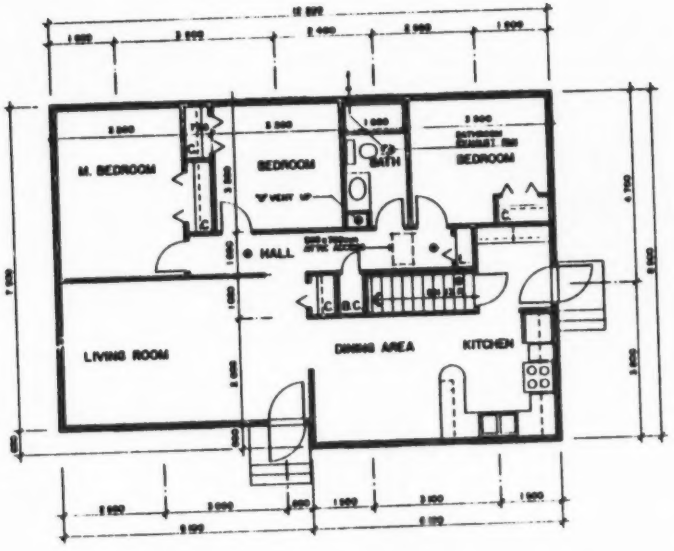
| LOCATION | EDMONTON | CALGARY | RED DEER | FORT MCMURRAY | GRANDE PRAIRIE | HINTON | LETHBRIDGE | MEDICINE HAT | LLOYD-MINSTER |
|---|---|---|---|---|---|---|---|---|---|
| Divisions | | | | | | | | | |
| 13. Wallboard | 47,550 | 45,822 | 47,931 | 59,506 | 53,022 | 53,905 | 49,673 | 48,370 | 60,018 |
| 14. Flooring | 41,852 | 41,092 | 44,370 | 50,017 | 45,460 | 45,695 | 44,294 | 44,327 | 45,404 |
| 15. Painting | 18,296 | 17,627 | 19,774 | 22,226 | 20,795 | 22,004 | 21,534 | 22,183 | 22,038 |
| 16. Fitting | 37,429 | 37,389 | 37,624 | 44,116 | 41,776 | 38,823 | 41,351 | 41,349 | 42,723 |
| 17. Specialties | 15,370 | 15,370 | 15,370 | 17,647 | 17,077 | 16,458 | 16,009 | 16,009 | 16,531 |
| 18. Appliances | 27,886 | 27,886 | 27,912 | 29,644 | 29,568 | 28,840 | 28,534 | 28,510 | 28,816 |
| 19. Plumbing | 52,656 | 50,256 | 53,448 | 54,480 | 53,880 | 56,520 | 52,848 | 53,496 | 55,656 |
| 20. Heating | 28,776 | 27,864 | 30,048 | 35,664 | 35,880 | 36,192 | 26,736 | 28,584 | 38,304 |
| 21. Ventilation | 6,768 | 6,840 | 6,816 | 8,520 | 8,520 | 8,520 | 7,848 | 7,848 | 8,520 |
| 22. Fire Protection | 1,944 | 1,944 | 1,944 | 2,472 | 2,472 | 2,472 | 1,944 | 1,944 | 2,472 |
| 23. Electrical | 38,880 | 39,864 | 47,544 | 46,680 | 49,392 | 51,048 | 40,536 | 41,304 | 58,176 |
| 24. Site Overhead | 48,000 | 48,000 | 48,000 | 48,000 | 48,000 | 48,000 | 48,000 | 48,000 | 48,000 |
| Subtotals - 1-24 | $601,974 | $593,049 | $620,466 | $710,420 | $671,480 | $666,526 | $627,143 | $631,347 | $690,537 |
| 25. Gnrl. Contr's Ovhd.& Profit | 24,000 | 24,000 | 24,000 | 24,000 | 24,000 | 24,000 | 24,000 | 24,000 | 24,000 |
| TOTAL | $625,974 | $617,049 | $644,466 | $734,420 | $695,480 | $690,526 | $651,143 | $655,347 | $714,537 |

# APPENDIX A

## Reduced Drawings: Single-Detached Dwelling



BASEMENT / FOUNDATION PLAN

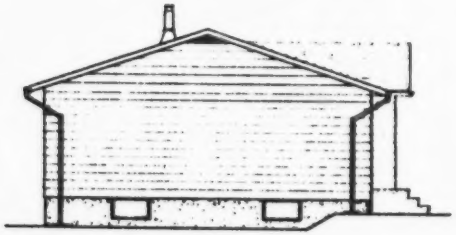



GROUND FLOOR PLAN

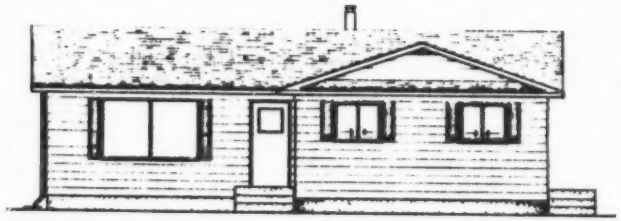
# ALBERTA HOUSE COST COMPARISON STUDY

FLOOR PLANS

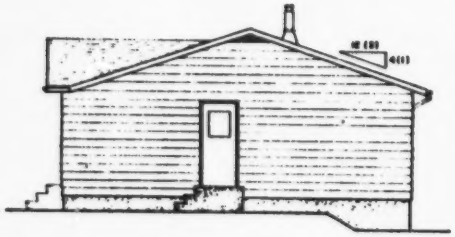
SCALE 1:50



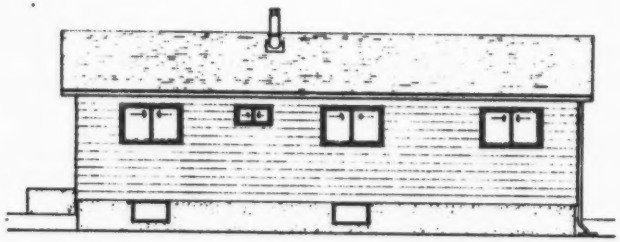
LEFT ELEVATION



FRONT ELEVATION



RIGHT ELEVATION

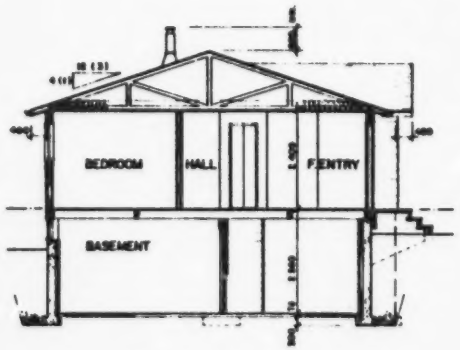


REAR ELEVATION

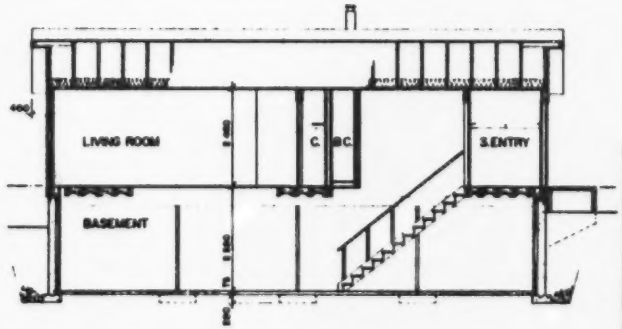
**ALBERTA HOUSE COST COMPARISON STUDY**

ELEVATIONS

SCALE 1 : 50




SECTION A




SECTION B

**EXTERIOR WALLS**

- PREFINISHED ALUMINUM SIDING
- ASPHALT FELT BUILDING PAPER
- 9mm EXT. GRADE PLYWOOD SHEATHING
- 38 x 89mm WOOD STUDS @ 400mm O.C.
  NO. 2 GR. SPRUCE OR BETTER
- R&I 2.113 BATT INSULATION
- .102mm POLY. VAPOUR BARRIER
- 13mm GYPSUM BOARD TAPED AND SANDED

**BASEMENT WALLS**

- 2 COATS ASPHALTIC EMULSION DAMPPROOFING
- 300mm - 20MPa POURED CONCRETE REINFORCED
- 38 x 64mm WOOD STRAPPING AT 400mm O.C.
- R&I 1.4 BATT INSULATION
- .102mm POLY VAPOUR BARRIER
- 13mm GYPSUM BOARD TAPED AND SANDED
- 200 x 450 - 20MPa CONT. POURED CONCRETE FOOTING, REINFORCED 100mm DIAMETER PERFORATED PLASTIC WEEPING PIPE
- 300mm MIN. CRUSHED GRAVEL COVER

**FLOORS**

GROUND

- 9mm PLYWOOD SHEATHING SUB FLOOR
- 16mm PLYWOOD SHEATHING SUB FLOOR UNDERLAY
- 38 x 235mm FLOOR JOISTS AT 400mm O.C.
- NO. 2 GRADE SPRUCE OR BETTER
- 9 - 38 x 235mm BUILT-UP BEAM NO. 2 GRADE FIR OR BETTER
- 5 - 73mm DIAMETER x 6.35mm THICK STEEL TELEPOSTS ON 635 x 635 x 200mm THICK CONCRETE PAD FOOTINGS. TELEPOSTS FITTED TOP AND BOTTOM WITH 6.35mm THICK STEEL BEARING PLATES. MIN. SIZE TO BE 100 x 100mm TOP PLATE TO MATCH WIDTH OF SUPPORTED BEAM.

BASEMENT

- 75mm - 20MPa POURED CONCRETE SLAB ON GRADE
- .152mm POLY VAPOUR BARRIER
- 150mm SAND OR GRAVEL BED

**ROOF**

- ASPHALT SHINGLES
- 12mm EXT. GRADE PLYWOOD SHEATHING
- APPROVED TRUSSES @ 600mm O.C.
- 38 x 89mm NO. 2 GRADE FIR OR BETTER
- R&I 6 BLOWN CELLULOSE INSULATION IN ATTIC
- .102mm POLY VAPOUR BARRIER
- 13mm GYPSUM BOARD CEILING

FASCIA

- 25 x 150mm SPRUCE BOARD, PREFINISHED ALUMINUM

SOFFIT

- PREFINISHED ALUMINUM PERFORATED

EAVESTROUGH

- PREFINISHED ALUMINUM GA. .57mm WITH FITTINGS

DOWNSPOUT

- PREFINISHED ALUMINUM GA. .57mm, CORRUGATED: RECTANGULAR WITH FITTINGS

FLASHINGS

- GALVANIZED STEEL GA. .457mm AT EAVES, VALLEYS, VENTS, ETC.

**STAIRS**

FRONT STEPS

- PRECAST CONCRETE WITH SUPPORTING BRACKETS
  1500 x 1500 x 600mm - 3 RISERS

SIDE STEPS

- PRECAST CONCRETE WITH SUPPORTING BRACKETS
  1200 x 1675 x 600mm - 3 RISERS

BASEMENT

- 38 x 235mm STRINGERS
- 38 x 235mm TREADS
- 6.4mm PLYWOOD RISERS
- 38mm DIAMETER PIN HANDRAIL WITH BRACKETS

**MECHANICAL NOTES**

1. ALL GAS FIRED APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH "THE GAS PROTECTION ACT AND REGULATIONS PURSUANT TO THAT ACT".
2. PROVIDE ADEQUATE COMBUSTION AIR FOR GAS FIRED FURNACE.
3. ALL DUCTWORK SHALL BE GALVANIZED STEEL IN CONFORMANCE WITH CODE.
4. PROVIDE FRESH AIR DUCT FROM OUTDOORS WITH SUITABLY SIZED FRESH AIR GRILLE AND CONNECT TO COLD RETURN AIR DUCT UPSTREAM OF FURNACE CIRCULATING FAN.
5. ALL HEATING EQUIPMENT SHALL BE SIZED TO MAINTAIN A TEMPERATURE OF +22°C INSIDE AT MAIN FLOOR WHEN OUTSIDE TEMPERATURE IS -36°C. THE BASEMENT TEMPERATURE MAY BE HELD AT +18°C.

**NOTES**

1. PROVIDE 500 x 700mm OPENABLE PLYWOOD HATCHWAY.
2. APPLY FLASHING, FULL WIDTH, OVER ALL EXTERIOR WALL OPENINGS.
3. UNOBSTRUCTED VENT AREA OF NOT LESS THAN 1/300 OF INSULATED CEILING AREA.
4. ANCHORAGE SHALL BE PROVIDED BY EMBEDDING THE ENDS OF THE FIRST FLOOR JOISTS IN CONCRETE, OR FASTENING THE SILL PLATE TO THE FOUNDATION WITH NOT LESS THAN 12.7mm DIAMETER ANCHOR BOLTS SPACED NOT MORE THAN 2.4 m O.C. SUCH ANCHOR BOLTS SHALL BE EMBEDDED NOT LESS THAN 100mm IN THE FOUNDATION AND SO DESIGNED THAT THEY MAY BE TIGHTENED WITHOUT WITHDRAWING THEM FROM THE FOUNDATION.
5. PROVIDE 38 x 38mm CROSS-BRIDGING OR 19 x 64mm CONTINUOUS STRAPPING AT MID-SPAN OF FLOOR JOISTS.
6. APPLY 0.15mm POLYETHYLENE AT ROOF EAVES, EXTENDING FROM EDGE OF ROOF 914mm UP ROOF SLOPE.
7. 10mm PLYWOOD ROOF SHEATHING MAY BE USED AS AN ALTERNATIVE TO 12mm PLYWOOD (SEE ROOF) IF ALL EDGES ARE SUPPORTED.
8. EAVESTROUGH AND DOWNSPOUTS SHALL CONFORM TO THE REQUIREMENTS OF SUBSECTION 9.27.15 OF THE ALBERTA BUILDING CODE.
9. ALL ELECTRICAL FACILITIES SHALL COMPLY WITH SUBSECTION 9.35 OF THE ALBERTA BUILDING CODE WHERE APPLICABLE.

# ALBERTA HOUSE COST COMPARISON STUDY

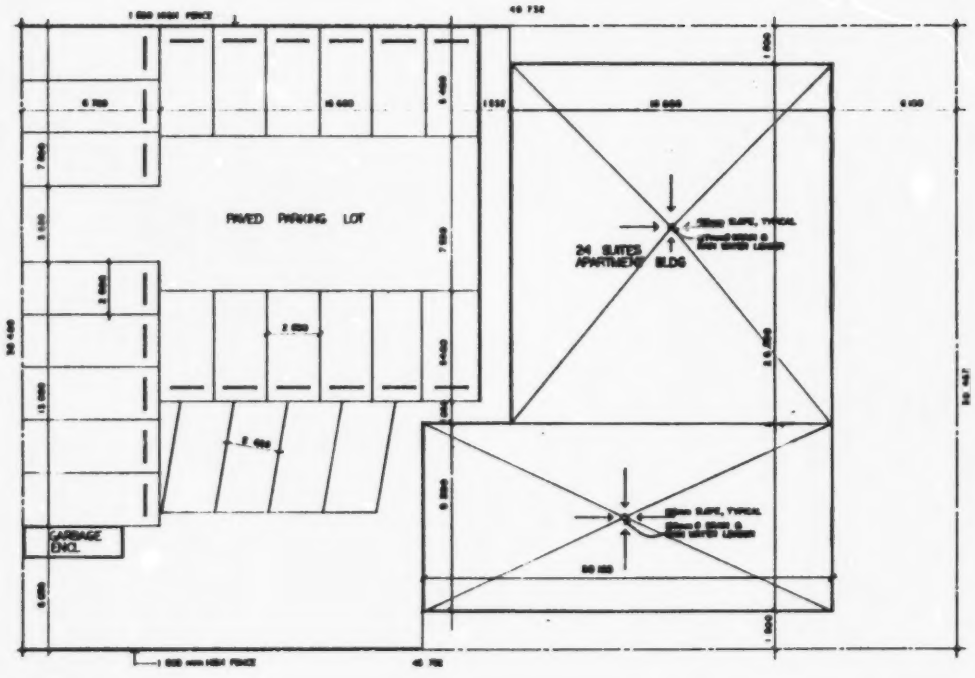
SECTIONS

SCALE 1:50

0 0.5 1 2 3 4 5 6m

# APPENDIX B

Reduced Drawings: Walk-Up Apartment

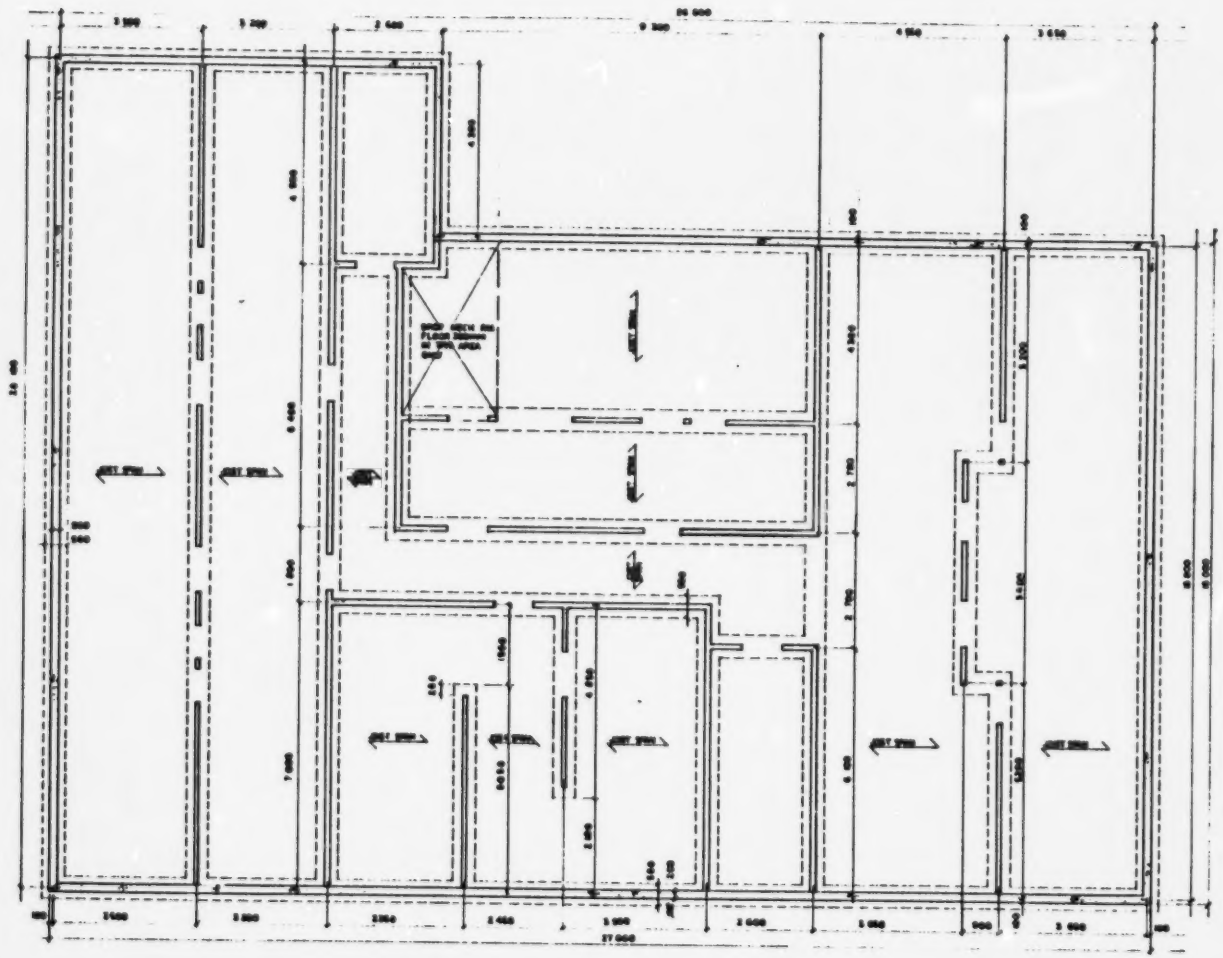



STATISTICS
SITE AREA 1996m²
SUITES: 24 ONE BEDROOM
BUILDING AREA 465m²
PARKING: 24 CARS

**ALBERTA HOUSE COST COMPARISON STUDY**

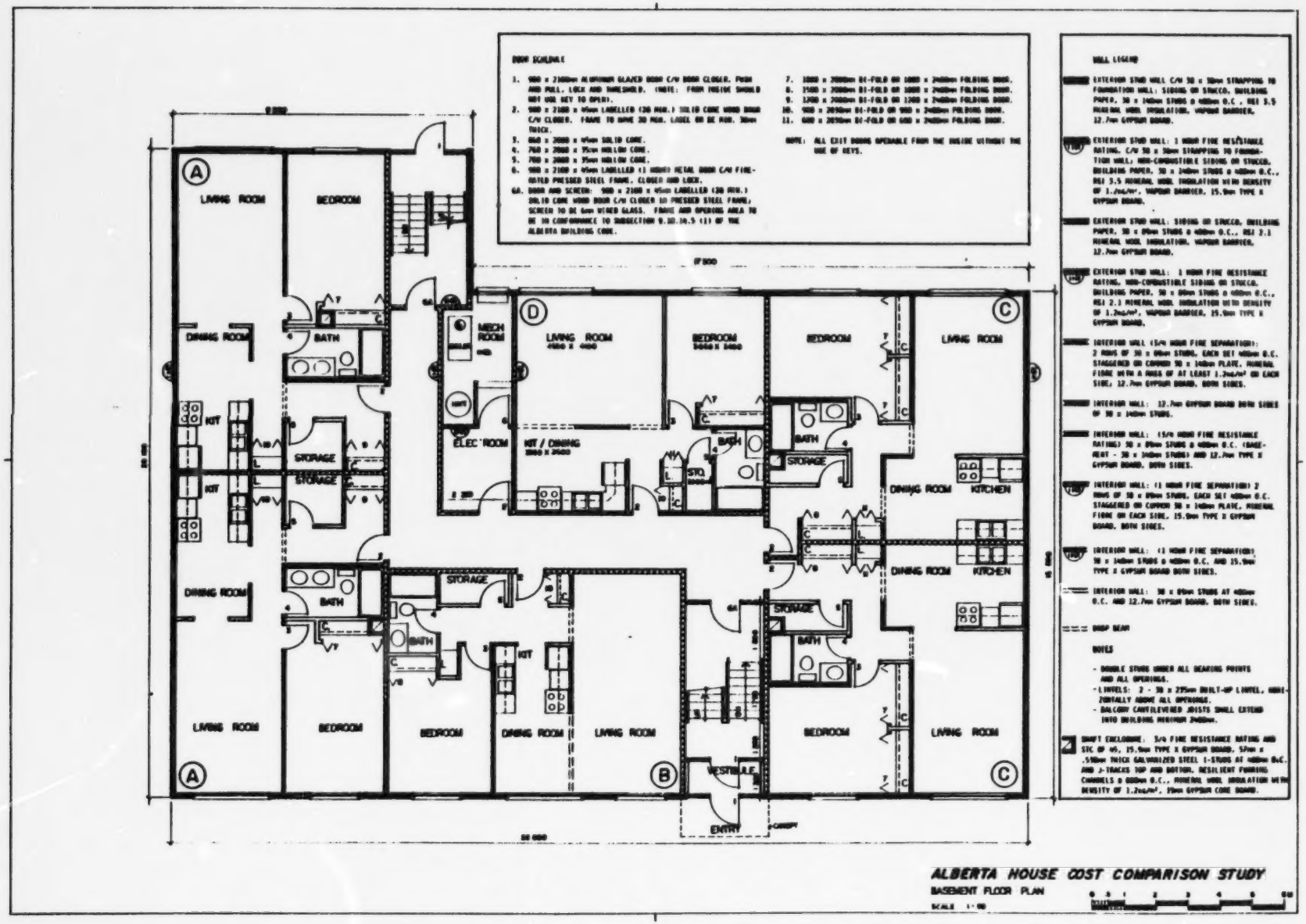
SITE PLAN

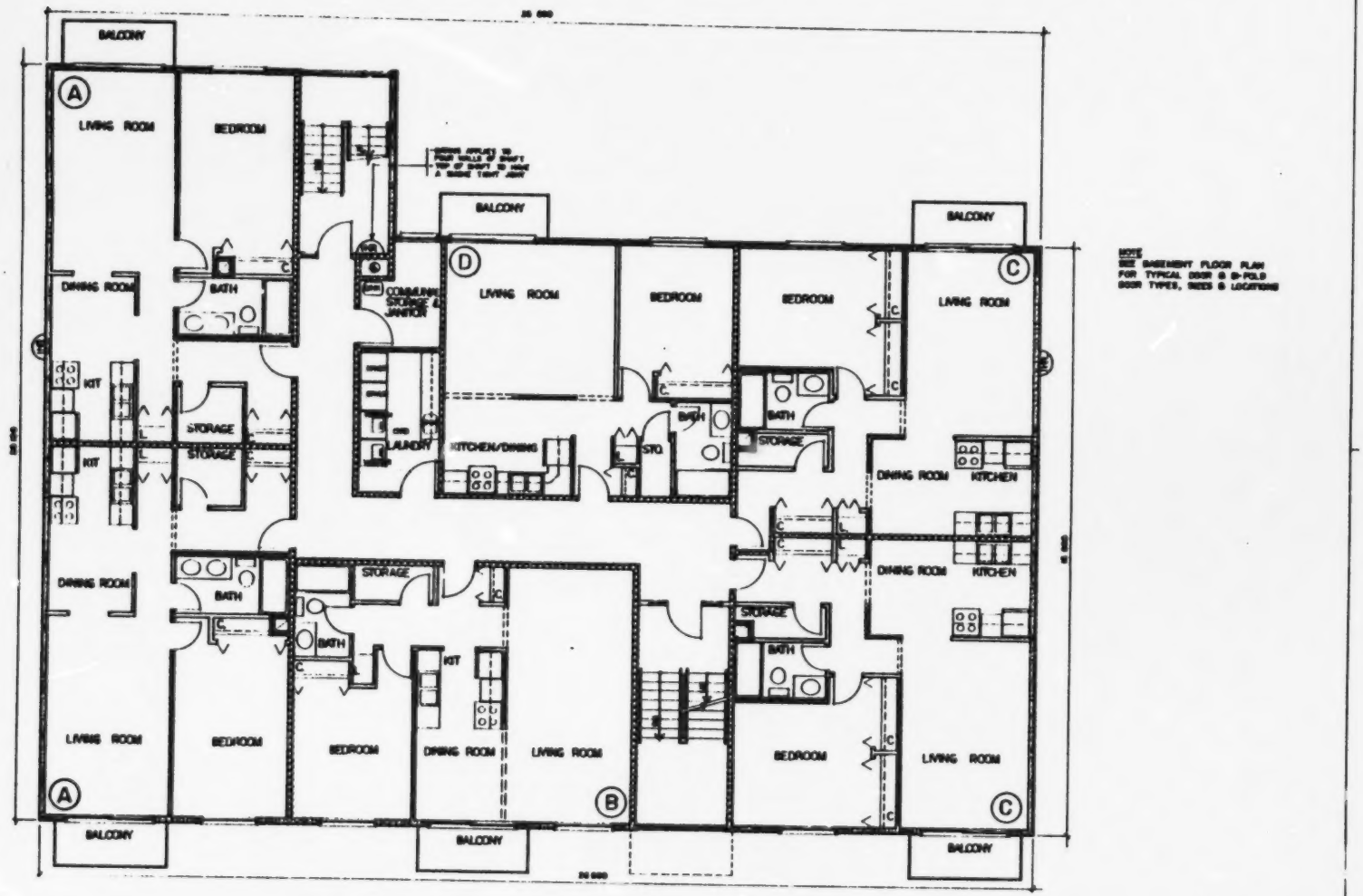
SCALE 1:100



**ALBERTA HOUSE COST COMPARISON STUDY**

FOUNDATION PLAN

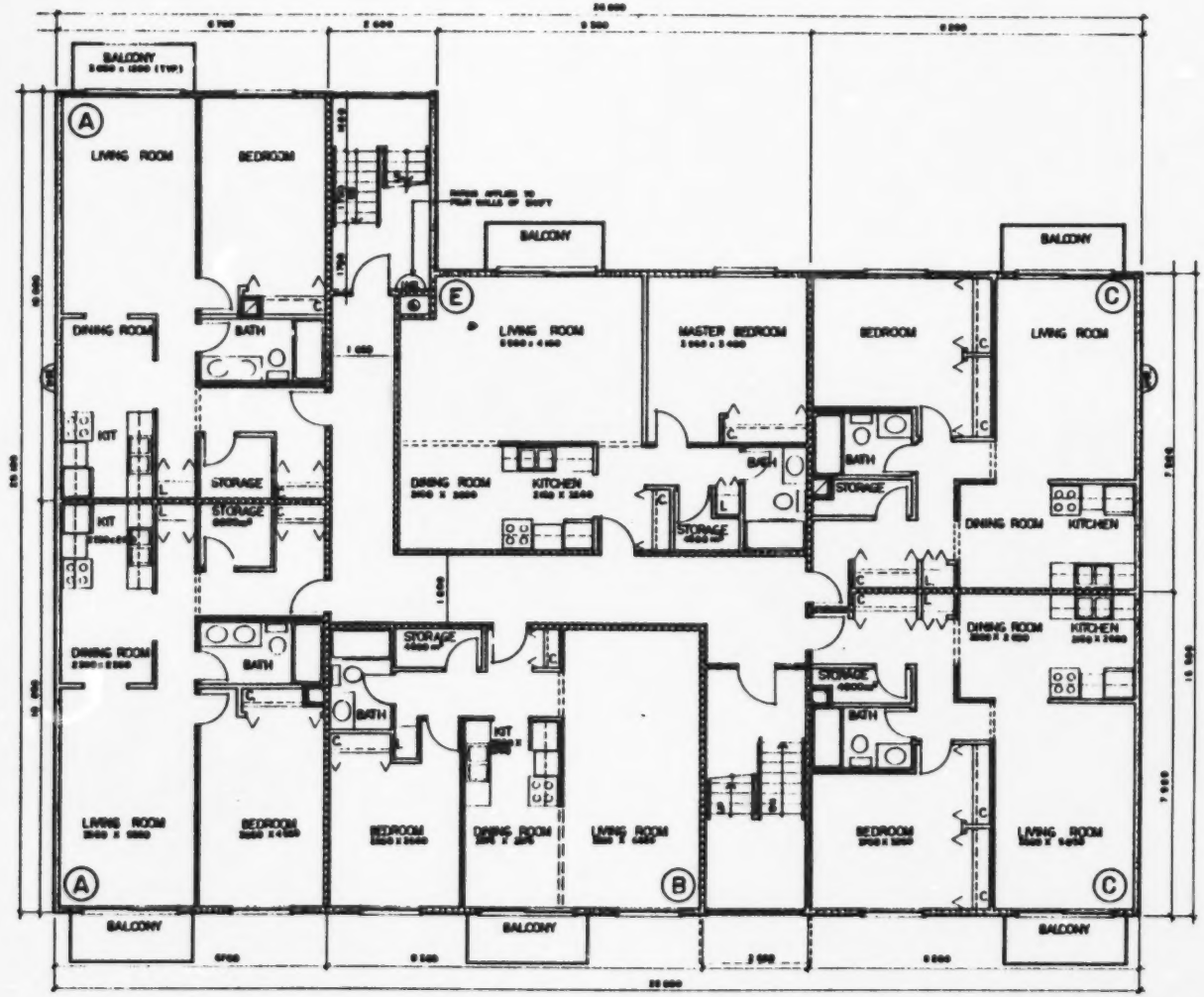

DOOR SCHEDULE
1. 900 x 2100mm ALUMINUM GLAZED DOOR C/W DOOR CLOSER. PUSH AND PULL, LOCK AND THRESHOLD. (NOTE: FROM INSIDE SHOULD NOT USE KEY TO OPEN).
2. 900 x 2100 x 45mm LABELLED (20 MIN.) SOLID CORE WOOD DOOR C/W CLOSER. FRAME TO HAVE 20 MIN. LABEL OR BE MIN. 36mm THICK.
3. 860 x 2000 x 45mm SOLID CORE.
4. 760 x 2000 x 35mm HOLLOW CORE.
5. 700 x 2000 x 35mm HOLLOW CORE.
6. 900 x 2100 x 45mm LABELLED (1 HOUR) METAL DOOR C/W FIRE-RATED PRESSED STEEL FRAME, CLOSER AND LOCK.
6A. DOOR AND SCREEN: 900 x 2100 x 45mm LABELLED (20 MIN.) SOLID CORE WOOD DOOR C/W CLOSER IN PRESSED STEEL FRAME, SCREEN TO BE 6mm WIRED GLASS. FRAME AND OPENING AREA TO BE IN CONFORMANCE TO SUBSECTION 9.10.14.5 (1) OF THE ALBERTA BUILDING CODE.
7. 1800 x 2000mm BI-FOLD OR 1800 x 2400mm FOLDING DOOR.
8. 1500 x 2000mm BI-FOLD OR 1500 x 2400mm FOLDING DOOR.
9. 1200 x 2000mm BI-FOLD OR 1200 x 2400mm FOLDING DOOR.
10. 900 x 2030mm BI-FOLD OR 900 x 2400mm FOLDING DOOR.
11. 600 x 2030mm BI-FOLD OR 600 x 2400mm FOLDING DOOR.
NOTE: ALL EXIT DOORS OPENABLE FROM THE INSIDE WITHOUT THE USE OF KEYS.
WALL LEGEND
EXTERIOR STUD WALL C/W 38 x 38mm STRAPPING TO FOUNDATION WALL; SIDING OR STUCCO, BUILDING PAPER, 38 x 140mm STUDS @ 400mm O.C., REI 3.5 MINERAL WOOL INSULATION, VAPOUR BARRIER, 12.7mm GYPSUM BOARD.
EXTERIOR STUD WALL: 1 HOUR FIRE RESISTANCE RATING. C/W 38 x 38mm STRAPPING TO FOUNDATION WALL; NON-COMBUSTIBLE SIDING OR STUCCO, BUILDING PAPER, 38 x 140mm STUDS @ 400mm O.C., REI 3.5 MINERAL WOOL INSULATION WITH DENSITY OF 1.2kg/m³, VAPOUR BARRIER, 15.9mm TYPE X GYPSUM BOARD.
EXTERIOR STUD WALL: SIDING OR STUCCO, BUILDING PAPER, 38 x 89mm STUDS @ 400mm O.C., REI 2.1 MINERAL WOOL INSULATION, VAPOUR BARRIER, 12.7mm GYPSUM BOARD.
EXTERIOR STUD WALL: 1 HOUR FIRE RESISTANCE RATING. NON-COMBUSTIBLE SIDING OR STUCCO, BUILDING PAPER, 38 x 89mm STUDS @ 400mm O.C., REI 2.1 MINERAL WOOL INSULATION WITH DENSITY OF 1.2kg/m³, VAPOUR BARRIER, 15.9mm TYPE X GYPSUM BOARD.
INTERIOR WALL (1/2 HOUR FIRE SEPARATION): 2 ROWS OF 38 x 89mm STUDS, EACH SET @ 400mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE WITH A RWS OF AT LEAST 1.2kg/m³ IN EACH SIDE, 12.7mm GYPSUM BOARD, BOTH SIDES.
INTERIOR WALL: 12.7mm GYPSUM BOARD BOTH SIDES OF 38 x 140mm STUDS.
INTERIOR WALL: (1/2 HOUR FIRE RESISTANCE RATING) 38 x 89mm STUDS @ 400mm O.C. (BASE-MENT - 38 x 140mm STUDS) AND 12.7mm TYPE X GYPSUM BOARD, BOTH SIDES.
INTERIOR WALL: (1 HOUR FIRE SEPARATION) 2 ROWS OF 38 x 89mm STUDS, EACH SET @ 400mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE IN EACH SIDE, 15.9mm TYPE X GYPSUM BOARD, BOTH SIDES.
INTERIOR WALL: (1 HOUR FIRE SEPARATION) 38 x 140mm STUDS @ 400mm O.C. AND 15.9mm TYPE X GYPSUM BOARD BOTH SIDES.
INTERIOR WALL: 38 x 89mm STUDS AT 400mm O.C. AND 12.7mm GYPSUM BOARD, BOTH SIDES.
DROP BEAM
NOTES
- DOUBLE STUDS UNDER ALL BEARING POINTS AND ALL OPENINGS.
- LINTELS: 2 - 38 x 235mm BUILT-UP LINTEL, MINIMUM 2 ENDS ALL OPENINGS.
- BALCONY CANTILEVERED JOISTS SHALL EXTEND INTO BUILDING MINIMUM 2400mm.
SHAFT ENCLOSURE: 1/2 FIRE RESISTANCE RATING AND STC OF 45, 15.9mm TYPE X GYPSUM BOARD, 57mm x .55mm THICK GALVANIZED STEEL I-STUDS AT 400mm O.C. AND J-TRACKS TOP AND BOTTOM, RESILIENT FURRING CHANNELS @ 600mm O.C., MINERAL WOOL INSULATION WITH DENSITY OF 1.2kg/m³, 15mm GYPSUM CORE BOARD.
A
B
C
D
LIVING ROOM
BEDROOM
DINING ROOM
BATH
KIT
KITCHEN
STORAGE
MECH ROOM
ELEC ROOM
KIT / DINING
STO.
VESTIBULE
ENTRY
CANOPY
ALBERTA HOUSE COST COMPARISON STUDY
BASEMENT FLOOR PLAN
SCALE 1:100




**ALBERTA HOUSE COST COMPARISON STUDY**

MAIN FLOOR PLAN

SCALE 1:50



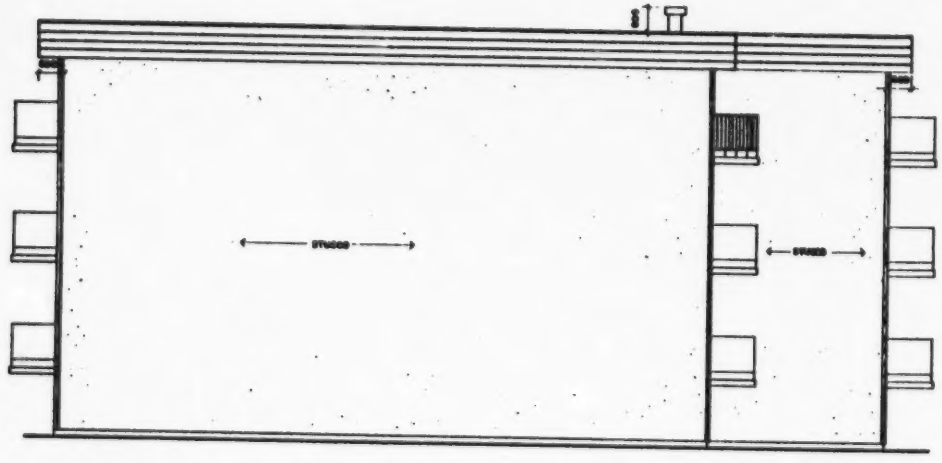

NOTE
SEE BASEMENT FLOOR PLAN
FOR TYPICAL DOOR, DOOR
DOOR TYPES, SIZES & LOCATIONS

**ALBERTA HOUSE COST COMPARISON STUDY**

2ND & 3RD FLOOR PLAN

SCALE 1:100

FRONT ELEVATION

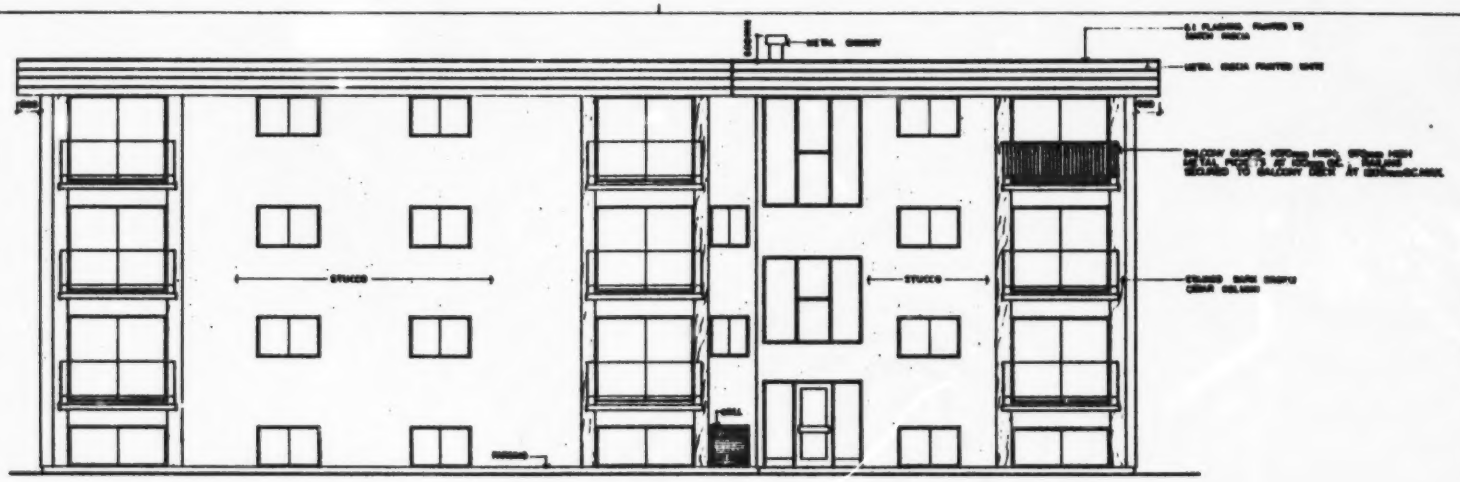



RIGHT ELEVATION

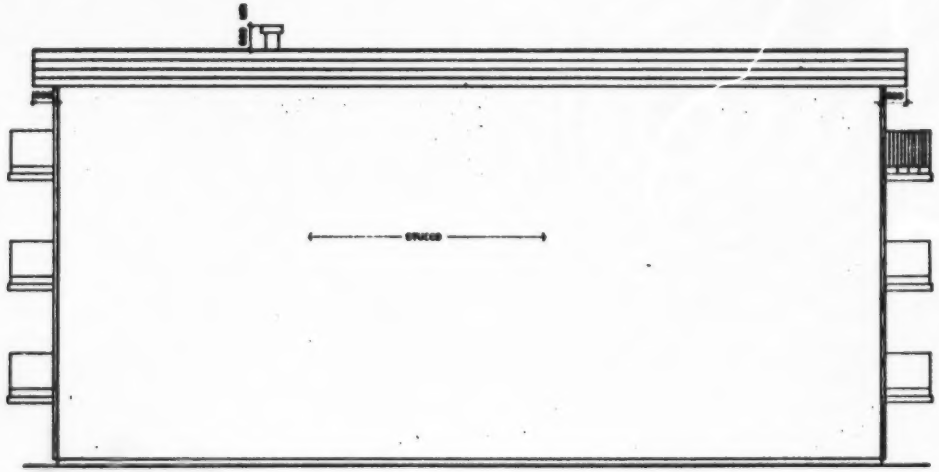
**ALBERTA HOUSE COST COMPARISON STUDY**

ELEVATIONS

SCALE 1:50




REAR ELEVATION

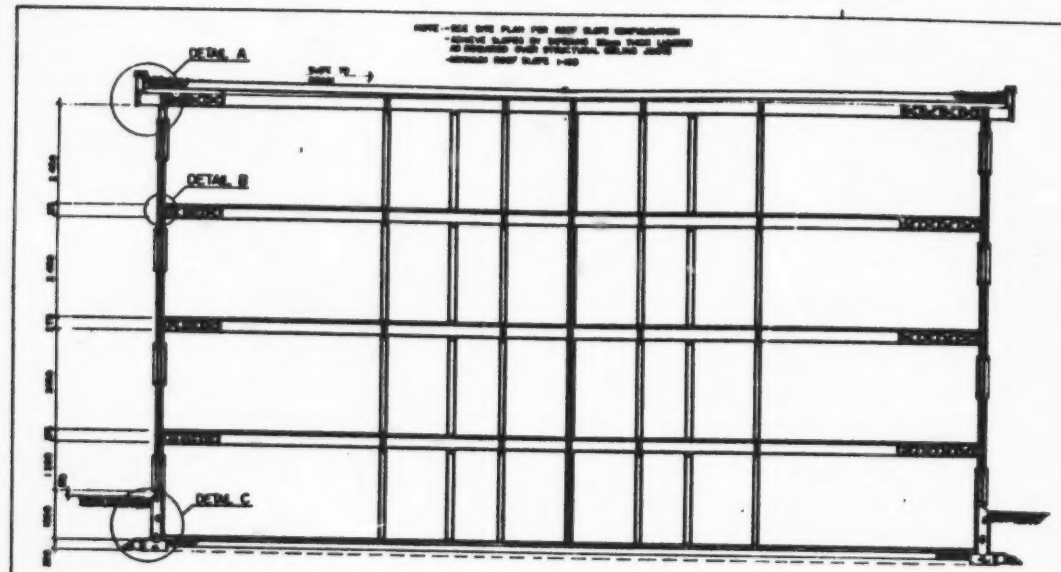



LEFT ELEVATION

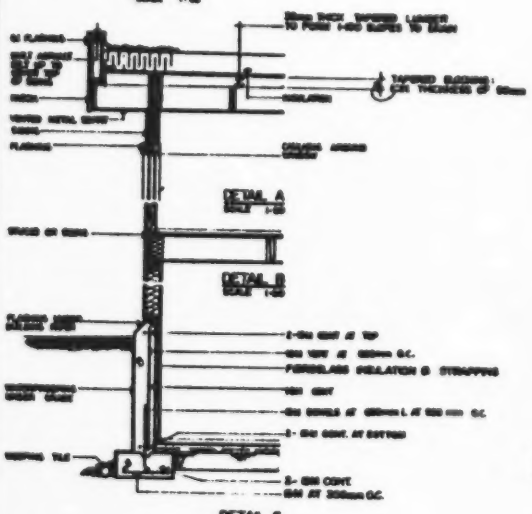
**ALBERTA HOUSE COST COMPARISON STUDY**

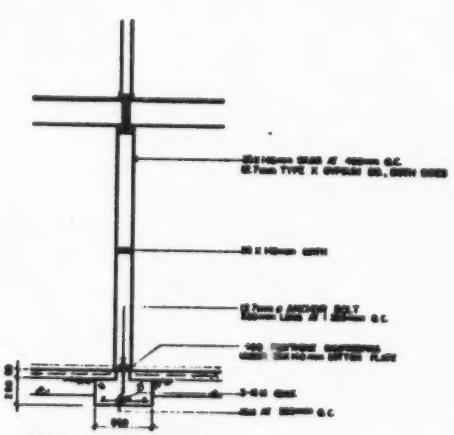
ELEVATIONS

SCALE 1:50




SECTION
SCALE 1:100



TYPICAL INTERIOR FOOTING
SCALE 1:20

ROOF CONSTRUCTION - 1 HOUR FIRE RESISTANCE RATING

- ROOFING GRAVEL
- BUILT-UP ROOFING
- RSI 6 RIGID FIBREGLASS INSULATION AND VAPOUR BARRIER
- 10mm PLYWOOD SHEATHING: ALL EDGES SUPPORTED WITH RSIL 38 x 38mm WOOD BLOCKING
- 38 x 235mm NO. 1 SPRUCE JOISTS AT 400mm O.C.
- 38 x 38mm CROSS-BRIDGING
- 15.9mm TYPE X GYPSUM BOARD

NOTE
ATTIC INSULATED TO RSI 10.5 MIN. INSULATION SET ON JOIST SPACE

EXTERIOR WALL CONSTRUCTION

TYPE A: NO FIRE RESISTANCE RATING

- SIDING OR STUCCO
- BUILDING PAPER
- RSI 2.1 MINERAL WOOL INSULATION AND VAPOUR BARRIER
- 38 x 89mm WOOD STUDS @ 400mm O.C. (38 x 140mm WOOD STUDS @ 400mm O.C. FOR BASEMENT)
- 12.7mm GYPSUM BOARD

TYPE B: 1 HOUR FIRE RESISTANCE RATING

- SAME AS TYPE A EXCEPT MINERAL WOOL INSULATION TO HAVE DENSITY OF 1.7kg/m³; 15.9mm TYPE X GYPSUM BOARD AND STUCCO OR NON-COMBUSTIBLE SIDING

FLOOR CONSTRUCTION

- 1/2 HOUR FIRE SEPARATION AND S.T.C. RATING OF 45
- FLOOR FINISH
- 6mm PLYWOOD UNDERLAY
- 19mm T & G LUMBER OR 15.9mm PLYWOOD OR WAFERBOARD SUBFLOOR WITH MINERAL FIBRE BETWEEN JOISTS SPACED 400mm O.C.
- 38 x 235mm NO. 1 SPRUCE JOISTS AT 400mm O.C.
- 38 x 38mm CROSS-BRIDGING AT 2.1m O.C. MAX.
- RESILIENT CHANNELS
- 15.9mm TYPE X GYPSUM BOARD TYPICALLY EXCEPT FOR MECHANICAL ROOM CEILING: APPLY 2 LAYERS OF 15.9mm TYPE X GYPSUM BOARD

LOADBEARING AND NON-BEARING WALL CONSTRUCTION

- 1/2 HOUR FIRE SEPARATION AND S.T.C. RATING OF 45
- TWO ROWS 38 x 89mm STUDS, EACH SET 400mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE WITH A MASS OF AT LEAST 1.2kg/m² IN EACH SIDE
- 12.7mm GYPSUM BOARD, BOTH SIDES.

BEARING WALL CONSTRUCTION

- 1/2 HOUR FIRE RESISTANCE RATING
- 38 x 140mm OR 38 x 89mm WOOD STUDS @ 400mm O.C.
- 12.7mm TYPE X GYPSUM WALLBOARD, BOTH SIDES

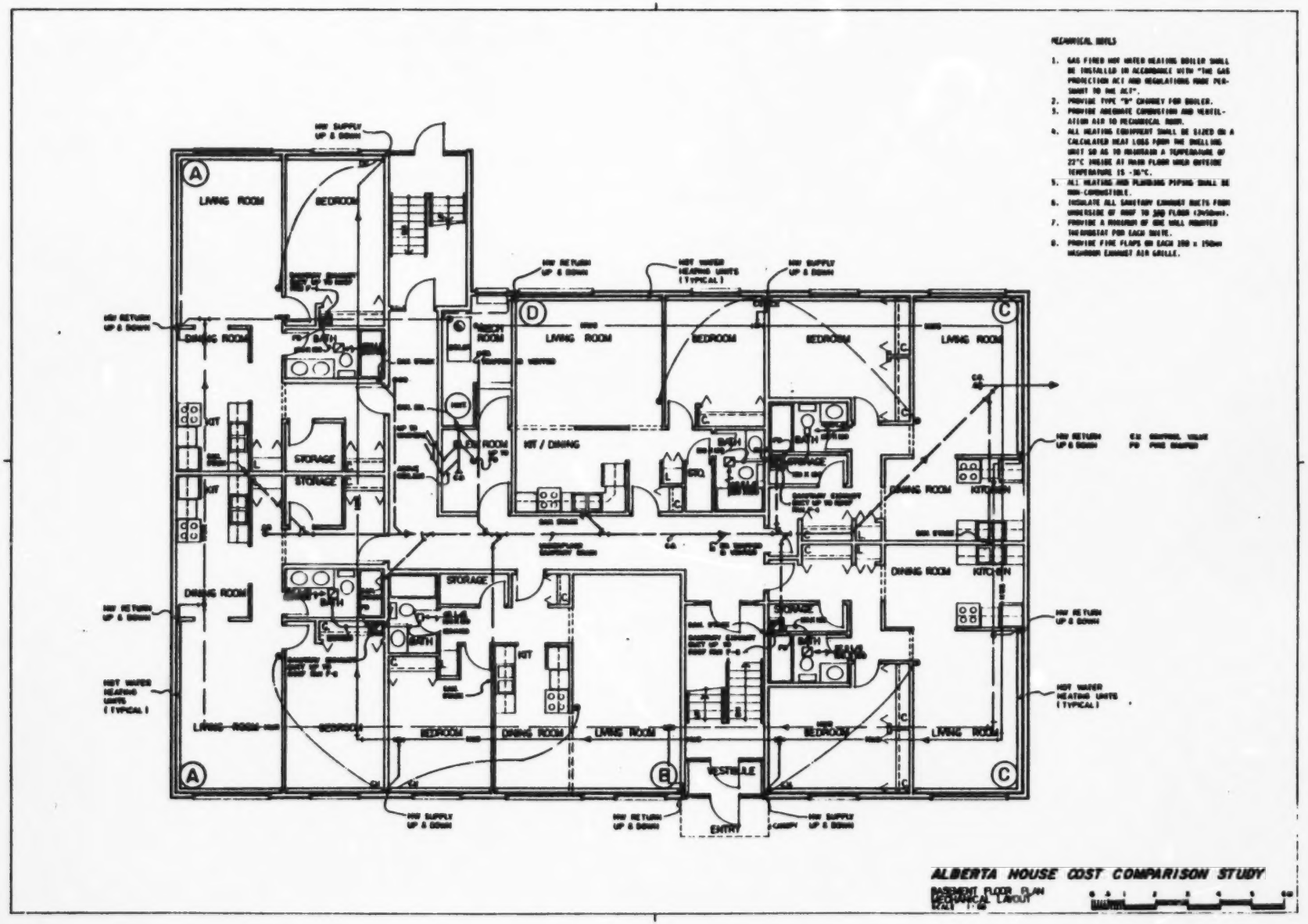
NOTES

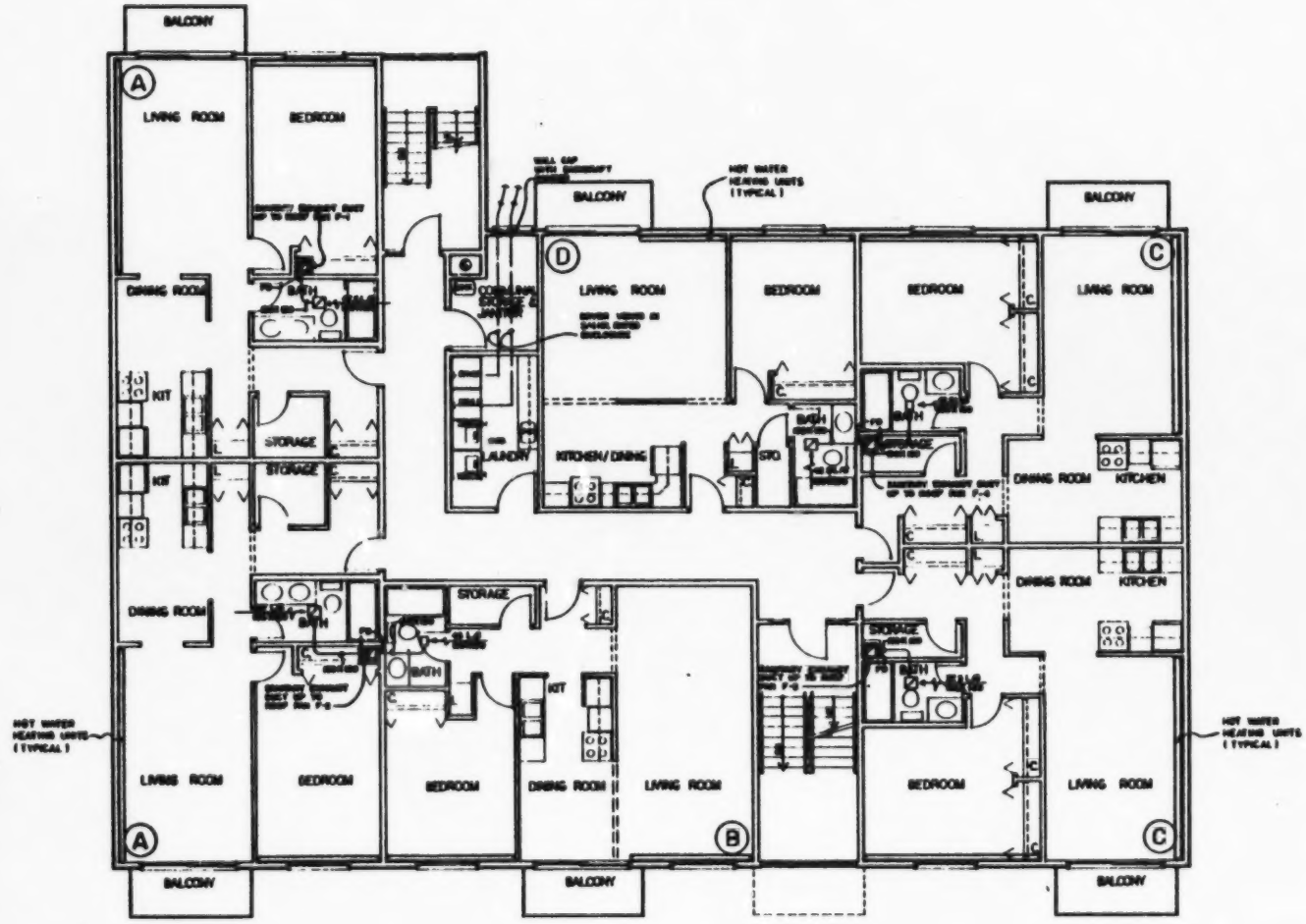
1. PROVIDE GALVANIZED STEEL, GA. .45mm AT THE HEAD OF ALL EXTERIOR OPENINGS.
2. WEEPING TILES SHALL BE LAID ON UNDISTURBED OR WELL-COMPACTED SOIL SO THAT THE TOP OF THE WEEPING TILE IS BELOW THE UNDERSIDE OF THE FLOOR SLAB.

# ALBERTA HOUSE COST COMPARISON STUDY

SECTION & DETAILS

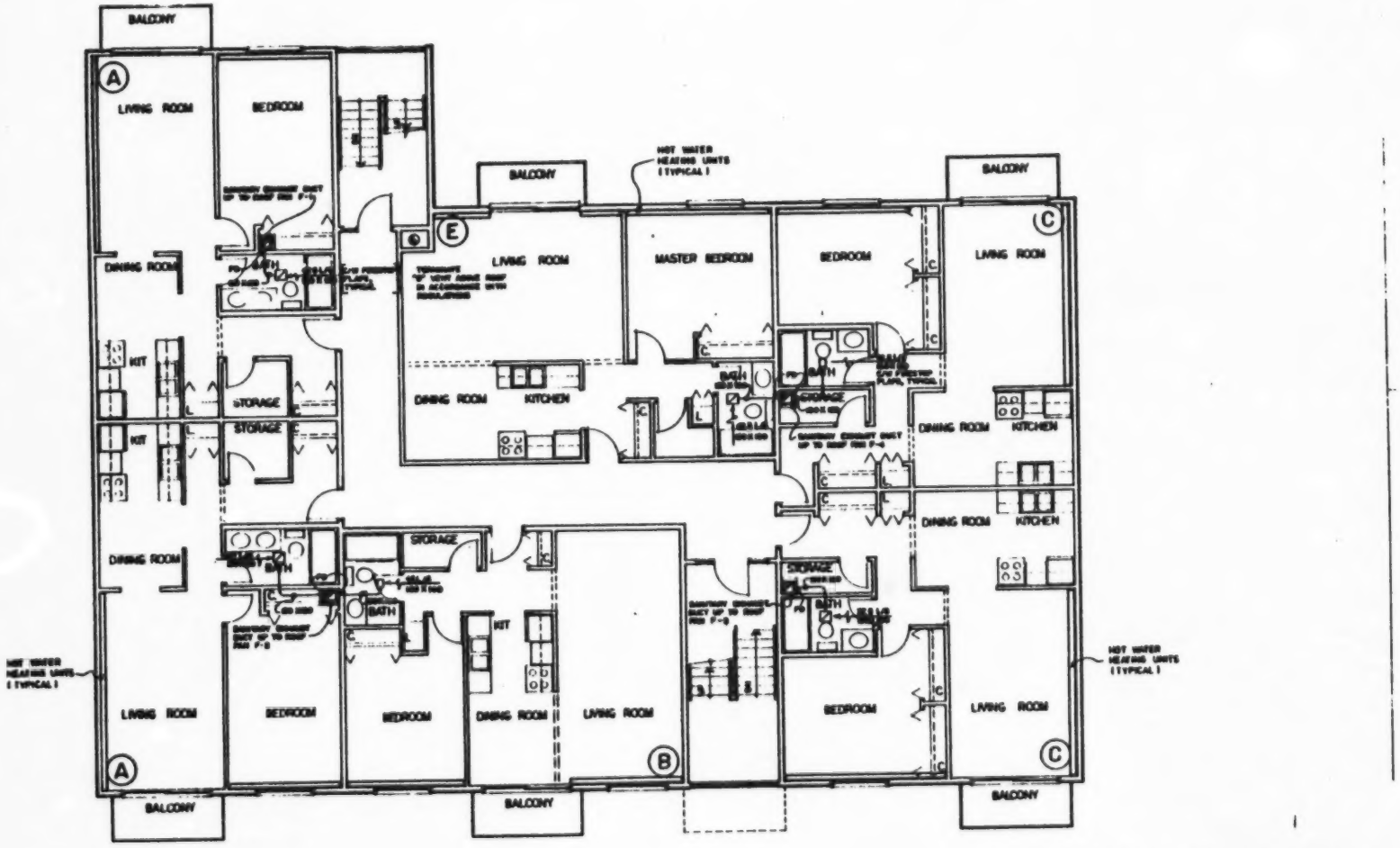
SCALES AS SHOWN


MECHANICAL NOTES
1. GAS FIRED HOT WATER HEATING BOILER SHALL BE INSTALLED IN ACCORDANCE WITH "THE GAS PROTECTION ACT AND REGULATIONS MADE PURSUANT TO THE ACT".
2. PROVIDE TYPE "B" CHIMNEY FOR BOILER.
3. PROVIDE ADEQUATE COMBUSTION AND VENTILATION AIR TO MECHANICAL ROOM.
4. ALL HEATING EQUIPMENT SHALL BE SIZED ON A CALCULATED HEAT LOSS FROM THE DWELLING UNIT SO AS TO MAINTAIN A TEMPERATURE OF 22°C INSIDE AT MAIN FLOOR WHEN OUTSIDE TEMPERATURE IS -30°C.
5. ALL HEATING AND PLUMBING PIPING SHALL BE NON-COMBUSTIBLE.
6. INSULATE ALL SANITARY EXHAUST DUCTS FROM UNDERSIDE OF ROOF TO 300 FLOOR (2x10mm).
7. PROVIDE A MINIMUM OF ONE WALL MOUNTED THERMOSTAT FOR EACH SUITE.
8. PROVIDE FIRE FLAPS ON EACH 200 x 150mm MINIMUM EXHAUST AIR GRILLE.
HW SUPPLY UP & DOWN
HW RETURN UP & DOWN
HOT WATER HEATING UNITS (TYPICAL)
LIVING ROOM
BEDROOM
DINING ROOM
KITCHEN
STORAGE
BATH
LAUN. ROOM
MECH. ROOM
HOT / DINING
VESTIBLE
ENTRY
A
B
C
D
ALBERTA HOUSE COST COMPARISON STUDY
BASEMENT FLOOR PLAN
MECHANICAL LAYOUT



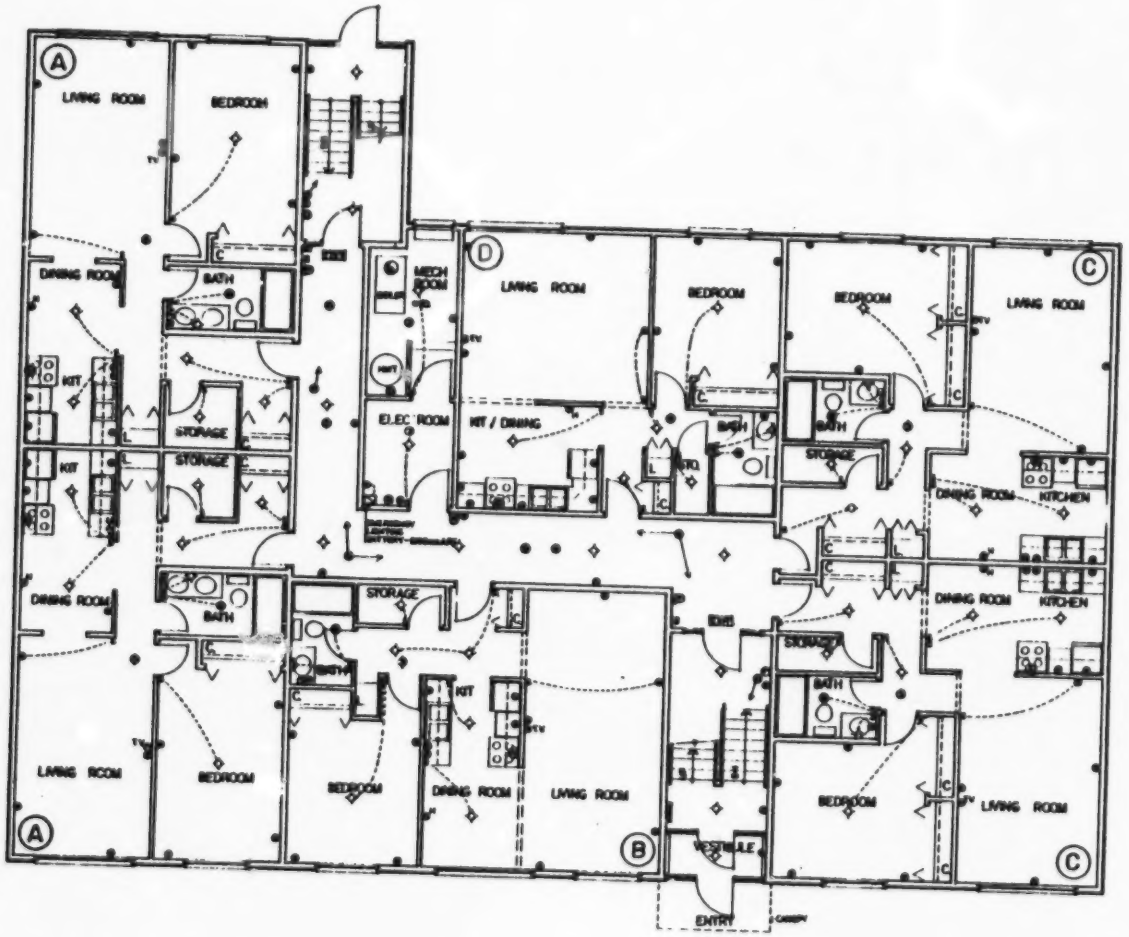

**ALBERTA HOUSE COST COMPARISON STUDY**

MAIN FLOOR PLAN
MECHANICAL LAYOUT




**ALBERTA HOUSE COST COMPARISON STUDY**

2ND & 3RD FLOOR PLAN
MECHANICAL LABOUR
SCALE 1" = 8'

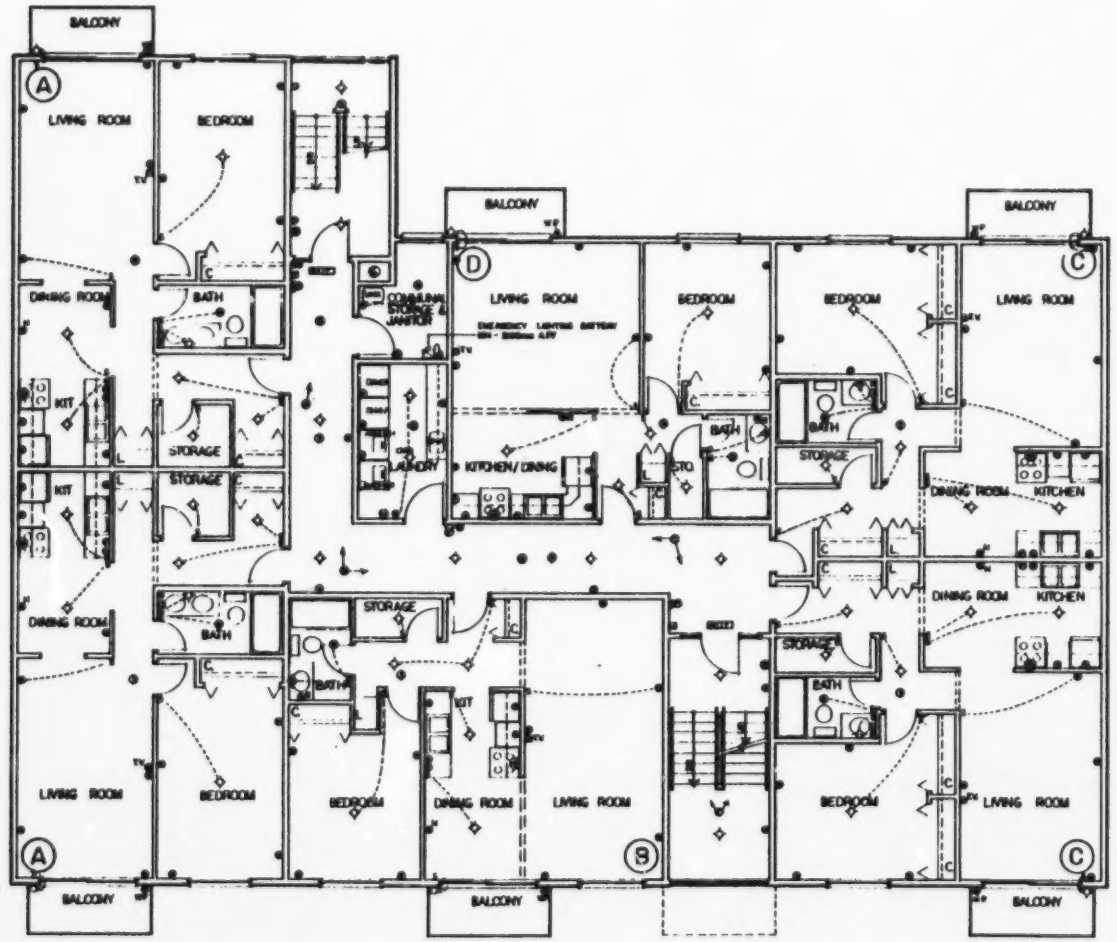



ELECTRICAL LEGEND

- EXIT LIGHTS WITH 2-25W - 120V AND 1-12V-15W EMERGENCY POWER SUPPLY
- EMERGENCY LIGHTING HEAD, 12V-12W
- EMERGENCY LIGHTING, 2 HEADS, 12V-12V
- SMOKE DETECTOR
- MANUAL FIRE ALARM STATION
- FIRE ALARM BELL, 254mm DIAMETER
- END-OF-LINE RESISTOR
- MASTER FIRE ALARM PANEL C/W ANNUNCIATOR AND GEL CELL BATTERY AND 120V POWER SUPPLY AND AUTOMATIC CHARGER. 1 ZONE PER FLOOR, 2 ZONES - STAIRS

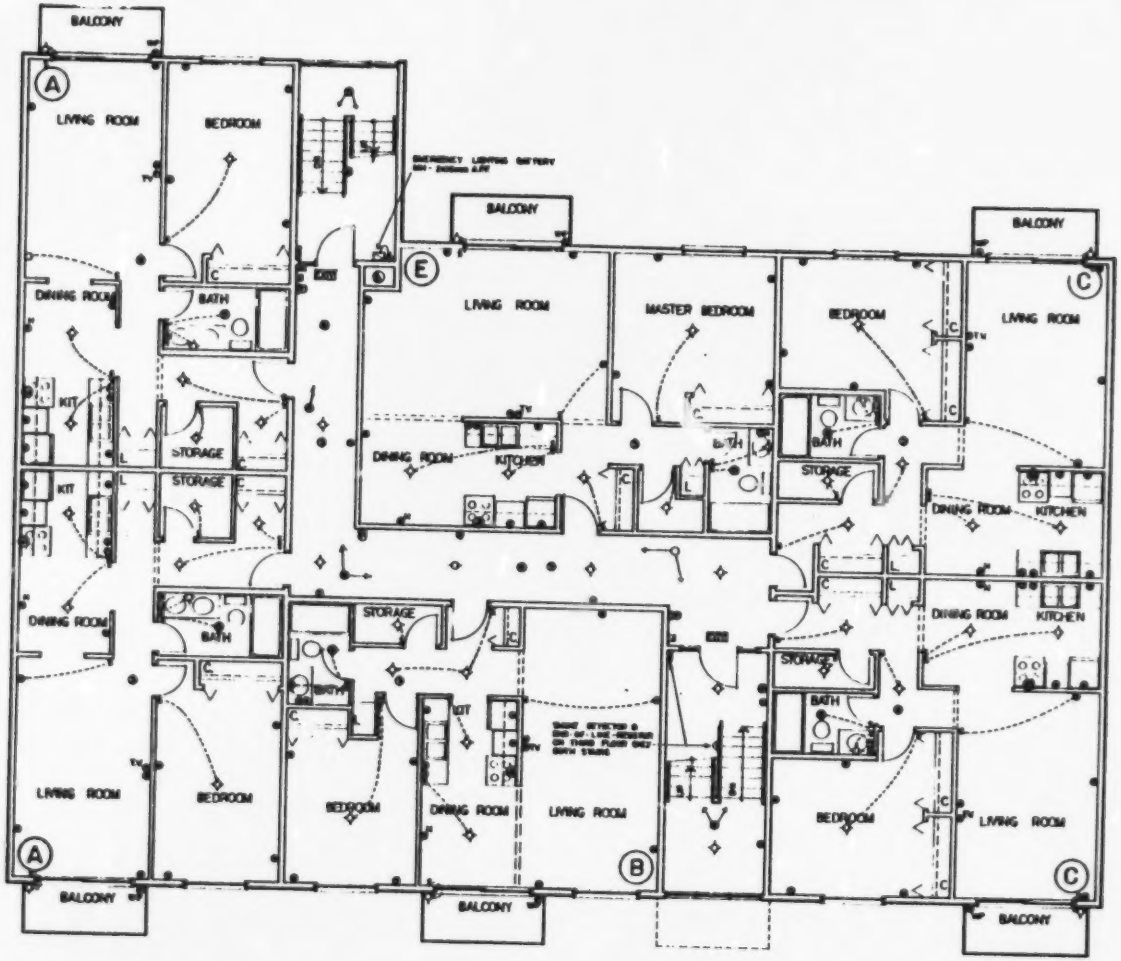
**ALBERTA HOUSE COST COMPARISON STUDY**

BASEMENT FLOOR PLAN
ELECTRICAL LAYOUT
SCALE 1/4"




**ALBERTA HOUSE COST COMPARISON STUDY**

MAIN FLOOR PLAN
ELECTRICAL LAYOUT
SCALE 1:50




**ALBERTA HOUSE COST COMPARISON STUDY**

2ND & 3RD FLOOR PLAN
ELECTRICAL LAYOUT
SCALE 1:50